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MEDICAL AND DENTAL ASPECTS OF FOCAL INFECTION*

BY HERMON C. BUMPUS, JR., M.D.†

THE idea that infection in and about the teeth may be the cause of systemic disease is not new. It is said that Hippocrates, the "Father of Medicine", who was born in 460 B.C., among his voluminous records of cases, reported that of a patient relieved of rheumatism by the extraction of a diseased tooth; and Benjamin Rush, in charge of part of the medical corps of our Revolutionary Army, reported a similar case. However, it is only in recent times, largely because of the persistent, careful and inspiring work of Rosenow, that such clinical observations have been confirmed by scientific investigation and experimentation on animals.

That alveolar infection can occur is a premise that all will admit. That it may exist about devitalized but apparently sound teeth in which there is no roentgenographic evidence of alveolar destruction is not so generally conceded, and that such infections may be the cause of recurring systemic disease many are unwilling to concede. I shall, therefore, by reviewing some of the work of my associates at The Mayo Clinic attempt to convince those who are still skeptical that bacteria obtained from apical abscesses and from about devitalized but apparently sound teeth do show properties of elective localization in animals, and that on their eradication, the systemic disease they have produced is sometimes cured.

That such disease is not always cured or even improved by the eradication of dental sepsis is, I believe, one of the chief reasons for the tardiness with which the ideas I am presenting have been accepted. When one considers that the tonsils are an equally fertile field for such infection, that the nasal sinuses are occasionally the source, that the genital organs, the prostate gland in the male and the cervix in the female, are most common harbors of noxious organisms, it seems strange that clear-cut clinical relief of systemic disease occurs as frequently as it does following the eradication of only dental sepsis. Furthermore, the systemic disease may have existed for so long a period that changes in tissue which are beyond repair have occurred, and the removal of the original focus can be of questionable value only. So it does not seem strange that many should be convinced of the falsity of these ideas after observing the many failures and that the few marked clinical successes should be either overlooked or ascribed to other causes.

When the attempt is made to demonstrate the presence or absence of infectious disease by the roentgen ray the density of shadows in the developed plate is due either to the destruction of tissue produced by the organisms, the attempts at repair made by the host through the laying down of calcium salts, or the increase in connective tissue. Bacteria themselves do not cast appreciable shadows, and hence the work they have done, not the workers, is what we seek to demonstrate. Thus, in a plate of a thorax we look for possible cavities that the organisms of tuberculosis have produced or for increased areas of density in the pulmonary tissue, the results of cicatricial changes incident to attempted repair. Likewise, in cases of tuberculosis of the kidney, we can sometimes find shadows as dense as those resulting from stones produced by the calcification of regions of tuberculous destruction. When we turn our attention to the alveolar process, it is not the bacteria that we expect to demonstrate but the destruction of the periapical tissue that they have produced. Naturally such bacteria must be present for a considerable period before such destruction occurs and to wait until the destruction has taken place is, it has always seemed to me, like locking the garage after the car has been stolen. Therefore, to prove the presence or absence of bacteria about a devitalized tooth, a roentgenogram is not sufficient. True, it will demonstrate their presence in certain cases in which the process is advanced, but it cannot prove their absence. This can only be done by cultural and microscopic study.

Such a study was recently carried on at the clinic by Austin and Cook and I quote from their papers:

"Specimens for bacteriologic study were obtained from the apexes of normal vital teeth. These teeth were removed usually because there were a scattered few, and a full denture was

*Read before the American Academy of Dental Science, Boston, Massachusetts, October 2, 1929.

†Bumpus—Section on Urology, The Mayo Clinic, Rochester, Minnesota. For record and address of author see "This Week's Issue," page 1264.

advised. Not more than two teeth were cultured in any one case.

"The patient is placed on the operating table and the same precautions are used as in other surgical procedures concerning sterile towels, gloves, gown, instruments, and so forth. The patient's head and chest are covered with sterile towels and the operative field is completely walled off with sterile gauze. The area about the tooth that is to be removed is dried with a sterile swab. It is then painted with 3 per cent. iodine, care being taken to have it penetrate well into the gingival margin about the tooth. Seventy-five per cent. alcohol is then applied to the area and it is dried with a sterile swab. The area is then tested for sterility by swabbing the field with a sterile swab and placing the swab in a tube of glucose-brain broth, which serves as a control. It is then placed in the incubator with the other cultures, and if a growth is obtained, the operative field and cultures are considered contaminated and the cultures are discarded.

"The tooth is then extracted, and while it is still held in the extraction forceps, the apex is severed with special cutting forceps, and dropped into a screw-top tube containing about 1 c.c. gelatin-Locke solution and sand. The tube is immediately sealed, taken to the bacteriologic laboratory, and placed on a shaking machine for ten minutes, so as to macerate as much as possible the tissue about the apex of the severed root ends. This shaken material is then transferred by means of pipets to two tubes of glucose-brain broth and one tube of glucose-brain agar, as well as being streaked on a blood-agar plate. The apex is placed in one of the tubes containing glucose-brain broth. Glucose-brain broth and glucose-brain agar are used in this study because of their nutritive qualities, which are especially favorable for the growth of organisms encountered in infections about the oral cavity. The long tubes of brain broth provide every degree of oxygen tension; the brain at the bottom renders it anaërobic, while the top may be favorable for aërobic growth.

"Of the 100 cultures from normal vital teeth which were free from contamination, 4 per cent. showed positive growths of streptococci in glucose-brain broth and 96 per cent. of the cultures were negative. Of the 4 per cent. that gave positive cultures, 3 per cent. showed less than twenty colonies in glucose-brain agar, and 1 per cent. showed approximately 100 colonies. These cultures were incubated for as long as two weeks before they were discarded. A possible explanation for the 4 per cent. of positive cultures may be that some of these cultures were obtained from patients who were not only harboring a large number of infected teeth, some of which were immediately adjacent to the vital tooth culture, but were also suffering from infective diseases.

"In the pulpless group, which was used as a control, it was interesting to note that there was not a great difference in the percentage growths of streptococci in the series of roentgenologically negative teeth cultured and that of the roentgenologically positive group.

"In the roentgenologically negative group, the teeth cultured yielded *Streptococcus viridans* in 84 per cent. of the cultures.

"In the roentgenologically positive group of pulpless teeth, positive cultures of *Streptococcus viridans* were found in 94 per cent. of the cultures in glucose-brain broth, and 6 per cent. remained negative.

"Of the 100 pulpless teeth, including the roentgenologically negative and the roentgenologically positive groups, 89 per cent. gave a positive growth of *Streptococcus viridans* and 11 per cent. did not give a growth. Of this series, 75 per cent. yielded more than 100 colonies in agar, which indicated that considerable infection was present in most of the cases."

In such a study the presence of bacteria about devitalized but roentgenographically negative teeth seems clearly proved. If one does not believe that they can be a focus for systemic disease, there is ample justification for their removal because of the localized infection, unless one does not consider that infection itself is detrimental.

It is of interest to note also the frequency with which apparently edentulous mouths harbor bacteria in the alveolar process. Euster-man, in a study of 290 edentulous or partially edentulous mouths, found 129 roots or other evidence of residual areas of infection. Because the old methods of removing teeth did not permit of elimination of the entire tooth and its associated lesion in all cases he expressed the belief that 37 per cent. of the regions to which plates are adapted will be found to harbor infection. Thus, the importance of roentgen-ray examination of edentulous mouths is evident, for teeth, as a possible focus of infection, cannot be excluded simply because they were all extracted years before.

The granuloma which results from periapical infection frequently is regarded as nature's protection, but Cook described it as an "infected area within the alveolar process which does not have drainage other than the blood and lymph streams. In most instances the infecting organism is *Streptococcus viridans* that lives both in the root canal proper and in the accessory canals or in the tissue beyond the apex of the tooth. These organisms propagate slowly. The bone about the apexes of infected teeth is destroyed so slowly that signs of physical disturbances do not occur. The inflammation about the apex, which is a slowly progressive and proliferative process, progresses at the expense of bone pressure, causes the alveolar process about the apex of the tooth to become resorbed and this space is filled with granulation tissue con-

sisting of polymorphonuclear leukocytes, fibroblasts, capillaries, and spindle cells, and the mass is surrounded by a fibrous capsule. This chronic dental focus or dental granuloma has a network of capillaries running through its fibrous capsule into the surrounding alveolar process. These serve as direct carriers of showers of bacteria and their split products from this region of chronic infection into the blood stream. Within the alveolar process, a dense bony structure, this encapsulated infectious mass is offered safe residence in which bacteria can multiply and from where they can invade the body at any time."

The characteristic recurrences of systemic diseases which seem attributable to focal infection would indicate that the susceptibility of the body varies; that there is a loss or diminution of immunity, due to lowered resistance from some intercurrent disease, prolonged physical strain, or advancing age. Sager and Nickel demonstrated this rather graphically at the Institute of Experimental Medicine of The Mayo Foundation. They found that in rabbits which originally gave negative blood cultures, abscesses made by the subcutaneous injection of silver nitrate remained sterile, whereas others became infected secondarily after the intravenous injection of bacteria, a graphic explanation of why, in individuals with demonstrable foci of infection, systemic disease does not invariably develop. To the medical mind, there seems little question but that many diseases, especially of the heart and circulatory system, are the result of long-continued poisoning from foci of infection which, over periods of years, have resulted in irreparable injury that is demonstrable only in the terminal stages. It must be borne in mind that, although it is possible, by animal experimentation, to reproduce graphically certain systemic diseases, in the laboratory it is impossible to simulate a focus that will continue, for decades, to discharge toxic products.

When the etiology of a certain disease suspected of being referable to focal infection is to be investigated, the procedure is not, as one might suppose, to develop pure cultures of the various types of bacteria present and by injecting these into experimental animals to reproduce the disease. Instead, all the bacteria are collected and injected into experimental animals, and if the disease under investigation is reproduced, the causative organism is then obtainable from the resulting lesions. Thus. the animal, acting as a filter, conserves the infinite time and patience that would be necessary to culture and subculture material from the original mixed focus in order to obtain pure strains. More important than the saving of labor is the fact that many bacteria are extremely sensitive to various degrees of oxygen tension, and if the usual cultural methods of plating on blood agar and isolating the suspected microörganisms in pure culture are followed, many organisms, and often the causative organisms, will die because of aërobic conditions.

When the focus furnishes sufficient tissue exudate or purulent discharge to make it feasible, the ideal method is to inject this infected material directly into the experimental animal. Often, however, as in the case of a devitalized tooth, the focus is not in a physical form to make this possible or the technical difficulties of having the laboratory animals immediately available are so great as to make this method of direct injection impossible. Under such conditions, primary cultures must be made in a culture medium having a graded oxygen tension. This is accomplished by using glucose broth in which small pieces of brain tissue have been placed. The bottom of the tube is rendered anaërobic, whereas the top necessarily remains aërobic, and the space between represents a gradient of oxygen pressure intermediate between the two extremes. Cultures from this material, after proper incubation, may be used for injection, with the assurance that all organisms have obtained the environment most congenial to their growth.

For some diseases that recur in rather acute form, such as iritis, pyelitis, epidemic hiccough, and myositis, this material may be injected directly into the auricular vein of a rabbit, and lesions simulating the original disease may result. It is clear that for the more chronic diseases, such as renal stone and nephritis, a more constant source of infection is necessary, and to simulate as nearly as possible what occurs in man, the canine tooth of a dog is usually employed. The crown is severed, the pulp is removed, and the pulp canal is inoculated with bacteria. The canal is then sealed with gutta percha and filled immediately with copper amalgam. After a period of three months, these foci are opened and cultures made to ascertain whether the organisms are still present and active. By this method of producing a chronic focus, Rosenow has produced renal stones, gastric ulcers, and nephritis in dogs.

Since urology is my specialty, I am naturally most interested in the application of the principles of focal infection to the urinary tract. Several years ago I had the pleasure of carrying out with Meisser of the Section on Dental Surgery of The Mayo Clinic some successful experiments in Rosenow's laboratory.

In 1914, Hunner, of Baltimore, described a disease of the bladder that is peculiar, in that, although the victim has to void as frequently as every fifteen to twenty minutes, the urine is invariably normal and cystoscopic examination of the bladder reveals areas of but slight congestion. He showed that the pathologic change present was due to an inflammatory process in the wall of the bladder and suggested that it might be of focal origin. To prove this hypoth-

esis, we injected into a series of rabbits bacteria from the teeth or tonsils of patients who had this disease. One case was most interesting. A woman, aged forty-four years, not only had all the classic symptoms of the disease but stated in her history that she had been subject in the past to attacks of cholecystitis. Roentgenograms revealed evidence of periapical infection at the roots of six teeth. These were removed surgically, two at a time, at intervals of eight and fourteen days, and pure cultures of green-producing streptococci were obtained from each. Following extraction of the teeth, the patient had marked exacerbation of urinary symptoms and recurrence of cholecystitis, with considerable pain below the right costal margin. Primary cultures from the infected teeth were injected into six rabbits. In five, lesions developed in the urinary tract, two had marked edema and swelling of the mucous membrane of the bladder with multiple submucosal hemorrhages and the gallbladder of one rabbit was thickened, red and edematous. Streptococci were recovered in pure culture from lesions in the kidney, and from the urine, in all but the normal rabbit, and from the bile of the rabbit that had lesions in the gallbladder. The streptococci recovered from the lesions in the urinary tract of these rabbits were injected into two normal rabbits. In both, lesions only of the urinary tract developed and the organisms were recovered again from these lesions in pure culture.

During the reaction which followed the removal of the infected teeth, many streptococci were found in the patient's urine. Two rabbits were injected with the cultures. In one rabbit marked lesions developed in the urinary bladder and in the gallbladder. Streptococci were isolated in cultures made from the lesions.

One interesting point in this case was the reproduction in the rabbits' bladders of the disease which affected the patient's bladder by means of the injection of bacteria from a dental focus. Other noteworthy features were the acute exacerbation of the patient's disease of the gallbladder on removal of the focus, and localization to the gallbladder when bacteria were injected into animals.

The fact that systemic diseases frequently are made worse by the removal of foci is occasionally used as an argument against the relationship. It seems only natural, if organisms at the apex of a tooth are responsible for any systemic disease, that there should occur an acute exacerbation of that disease when this focus is first opened and new channels into the blood stream are made available.

In all, in the study which Meisser and I made, nineteen animals were given injections and in sixteen, lesions of the urinary tract developed. In thirteen the lesions were in the urinary bladder.

As the disease described is somewhat rare, we decided, while carrying on this study, to see whether pyelonephritis, the most common of urinary infectious diseases, had any relationship to dental infection. Because pyelonephritis is characterized, in more than 90 per cent. of cases, by the presence of colon bacilli in the urine, considerable doubt existed that such a disease could be of focal origin. I will cite one case that was most impressive:

A married woman, aged forty-five years, had noticed dysuria for the previous three weeks. Just prior to the onset of the dysuria, after being up all night with a sick daughter, the woman had contracted a sore throat and had had a slight chill. Her home physician, who had attended her during the week previous to his sending her to the clinic, had made a diagnosis of pyelonephritis and stated that the temperature had been as high as 104° F. She complained very little of pain except at the end of urination.

Four teeth revealed evidence of periapical infection in the roentgenograms; one other tooth was devitalized but roentgenographically negative. The urine recovered from the kidneys contained pus, and colon bacilli in pure culture. Three rabbits were given injections of culture from the urine, and evidence of disease in their urinary tracts or elsewhere did not become discernible.

Two of the teeth with apical abscesses were removed and cultures made; in both streptococci were isolated. Three rabbits were given injections; in all, lesions of the kidneys developed and streptococci were recovered in pure culture from these lesions.

Six days later, three other teeth were removed, including one which did not show evidence of apical infection in the roentgenogram but which had been devitalized and its root canal filled. Cultures were injected into three rabbits, resulting in lesions of the kidney in two, one of which had been given an injection of bacteria from the devitalized but otherwise normal tooth. The day after the removal of these teeth, the patient had a severe chill and the temperature reached 106° F. Profuse sweating and falling temperature followed. During this reaction, a blood culture was taken and large numbers of green-producing streptococci were recovered. Two rabbits were given intravenous injections of this culture. In both, lesions developed in the kidneys and cultures from these lesions yielded the same type of green-producing streptococci which had been isolated from the blood. Cultures from the gallbladders, blood, spleens, and livers were all negative.

Urine obtained from the bladder of the patient on the day of the chill, one day later, and four days later, contained only colon bacilli. On the fifth day, however, the patient had sufficiently recovered to permit of cystoscopic examination, and the urine obtained from the kidneys and bladder was found to contain occasional streptococci, but it contained colon bacilli in far greater numbers. Samples of the mixed cultures were injected into five rabbits; in three, lesions of the kidney developed.

In order to study the relative ability of the two organisms to grow in urine, a twenty-four-hour sample of the patient's urine was autoclaved on three different occasions, and after being proved sterile, samples were inoculated and incubated, some with colon bacilli, some with streptococci, and some with both. It was found that, although the colon bacilli multiplied read-

ily, the streptococci had no such ability. We believe, therefore, that the original injury to the renal tissue was done by streptococci and that the colon bacilli which previously had been considered as the etiologic organisms were in truth but secondary invaders.

During the course of these experiments, Rosenow had been injecting into a sheep increasing doses of dead streptococci that showed definite localizing affinity for renal tissue. His aim was to produce in the sheep an immune serum for the organisms that produced pyelonephritis.

When, later, the sheep was killed, multiple small stones were found in the kidney. The question arose, if such calculi were the result of repeated injection of dead organisms with elective localizing power, what would be the result of producing a chronic focus of infection with live organisms that were thought to produce stone?

Rosenow and Meisser produced such a focus, using a dog's tooth and bacteria from the tooth of a patient with renal calculi for the purpose. The dog was examined roentgenographically to insure his freedom from stones, and after three months multiple calculi appeared in the kidney. The experiment was repeated several times with success.

With the use of the same technic, the relationship of dental sepsis to many other diseases has been demonstrated. Especially striking is the reproduction of acute iritis in animals. Following injection with suspected organisms, an acute septic process will develop in the eye in twenty-four to forty-eight hours after injection.

It must always be clearly borne in mind, however, that the teeth are by no means the only or the chief source of focal infection. The tonsils, the prostate gland, and the cervix have each been demonstrated to be as commonly the initial focus, and when eradication of the dental foci has been completed, the failure of satisfactory results may be due to the presence of organisms with elective localizing power in these other foci. Clinical evidence of the rôle of foci of infection, although at times not as convincing as scientific experiments in the laboratory, is nevertheless often most suggestive. Thus, patients with renal stones, almost without exception, are found to have abscessed teeth or infected tonsils.

Occasionally startling evidence of the relationship between dental sepsis and other disease is revealed, as in a patient with renal bleeding who came under my care not long ago. The patient was a dentist and the only possible focus we could discover was a devitalized but otherwise normal tooth. Its removal was advised, but the patient demurred. A year later, I received a letter stating that the bleeding had persisted until he had had the tooth removed. Thereafter he had been free of hematuria. I might continue citing many such clinical examples, but I will end by recounting the case of a patient who looked me up after the lapse of several years to tell me how his high blood pressure had returned to normal after he had had his abscessed teeth removed. He added, "I hope you will not neglect to let future patients benefit by what might have been for me a most unfortunate oversight on your part."

One is most likely to visualize the elective localization of bacteria as the actual passage of the bacteria, in the blood or lymph stream, from the focus to a distant point in the body, and it is known that this occurs. However, there is strong evidence to show that the toxic chemical products produced by these bacteria also travel in the blood stream and by their chemical affinity for certain tissues produce disease. What produces this affinity, causing some foci to act in a given environment while others attack entirely different tissue is an interesting problem to be solved. It is but another indication that as the science and art of medicine passed from the years of empiricism into the years of aseptic surgery, so now we are leaving the field of bacteriology to enter into the era of physiologic chemistry and physics.

THE SURGEON AND HIS ENVIRONMENT—HISTORICAL SKETCH*

BY FRED B. LUND, M.D.†

FOR the revisers of our books on anatomy who eliminate the names of their discoverers from the various parts of the body to which they were attached by right of discovery, I have no use. After all, our knowledge of anatomy, physiology and surgery is a hard won inheritance. Such terms as the Torcular Herophili, the Foramen of Vesalius, Scarpa's Triangle, Hunter's Canal, the Capsule of Glisson, the Circle of Willis, and the Malpighian Bodies seem to remind us of the blood and sweat which our forbears have waded through that we might inherit their knowledge. They tempt us to study the history of our art, than which there is no more delightful or elevating study to those who love their art and love mankind, for as saith the great Hippocrates, where there is the love of man, there is the love of the art. Our ancestors in the old days had to rob graves to learn the anatomy which they have trans-

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mitted to us, and this continued down to not very remote times. I believe the first law allowing the use of bodies of inmates of poor houses and prisons for dissection was passed in Massachusetts in 1837. In the early years of the eighteenth century that great surgeon, Dr. Nathan Smith, who founded the Dartmouth Medical School, at first being the only professor of all the subjects taught, so that he occupied not only a chair, but a whole settee on the faculty, in the words of the witty Holmes, had to leave Hanover and go to New Haven, where he became professor at Yale, on account of the unpopularity he had acquired in the New Hampshire countryside as a robber of graves, which after all was an occupation indispensable to his teaching. It helped a student to get a good mark in anatomy in those days if he was a good provider of material, and Amos Twitchell, of Keene, who first successfully tied the common carotid, had favorably attracted the attention of his teachers in just that way. Difficulties have always beset the student of science, and these difficulties up to recent times have been very largely the obstacles thrown in one's way by organized religious beliefs, by the Priesthood, who in the beginning took over healing as connected with the cult of the God of healing, among the Greeks, Apollo and Aesculapius; among the Egyptians, whose priest healers were specialists, each priest of the God reigning in that part of the heavens which had the diseased part of the body in its charge being a specialist in that part. The priests had a regular ritual for invocation of the God, which had to be pronounced, and was usually in verse. This was undoubtedly the origin of the incantations in verse which the old physicians used to pronounce over the patient at the time their remedy, whatever it was, was given, and which were sometimes employed even without the remedy. It had the advantage of combining faith cure with the physical remedy and supported the patient's belief in the superhuman or semi-divine wisdom of the doctor. One custom of our own which has descended from it, is our mysterious habit of writing prescriptions in Latin, which sounds, if read to the patient, like an incantation, and preserves the important function of hiding from him the nature of the medicine which he is taking, which is perhaps important, considering the frequency with which the drug administered belongs to that class which is known as a placebo.

When we consider the troubles which we have with cults, sciences, theosophies and other isms, and the amount of fuss we make about them, what must be our admiration of the leaders of our craft in the early days, when in a polytheistic religion, priestcraft, magic and intrenched religious prejudice controlled the art of healing. When we consider the ignorance, prejudice and superstition which the great Hippocrates had to fight to establish once and for all the profession of medicine as independent of the priesthood, he looms up as a still greater figure against the rising sun on our eastern mental horizons, for like the rising of the sun on the darkness of barbarbic ignorance was his lifting of the torch of clear reason both in ethics and science, that torch which, however dimmed during the dark ages of the middle centuries, has ever since lighted the path of our art.

If I go on with this sort of thing much longer, you may well wonder where the surgeon and his environment comes in. He comes in just here. In the days of Hippocrates and his followers down through Galen and even through Oribasius and Paul of Aegina, surgery and medicine were not separated. Surgery, which may be defined as the mechanical side of therapeutics, has the advantage of presenting to the view of the patient direct visible action and results, gained on mechanical principles, which can be explained, and practically understood.

The surgery of wounds, fractures and dislocations was much the same in Hippocrates' time as today, and much of his advice would not be out of place in a modern textbook on the subject, but his treatises on medicine are hard to understand, confused as they are by the humoral pathology. In complete ignorance of organic chemistry, the medical terminology had to be founded on some philosophical theory which seemed to fit the facts, and the humoral pathology had to do duty down almost to our own times. Hippocrates in his general treatises gives admirable advice on diet for the sick and on the whole, on climatic influences, but has mighty little to say about any remedies administered by the mouth, and in his case reports gives careful, accurate accounts of the symptoms, but says almost nothing about what was done. For this omission he is accused by many of cruelty, and a callous disposition, but I believe he left it out intentionally because he did not know, and he knew that he did not know, whether nature, or his remedies, helped the patient get well. The greater percentage of his reported cases died anyway, so he certainly did not report them for advertising purposes or edit them to make them better than they were, a practice not unknown in more recent medical history. Medical cases could be dieted, nursed, treated symptomatically and got well or died, and the wise old father of medicine, in the absence of exact knowledge, capitalized the "laissez faire" policy, which has characterized so many reactions against ignorant polypharmacy in so many subsequent reactions against regular practice. But when a shoulder was dislocated, or a bone broken and the limb lay useless like a flail, then mechanical principles would be applied. Immediate and manifest relief and often ultimate cure followed the efforts of the surgeon. The history of medicine and surgery has been largely the gradual increase in the application of direct mechanical

or chemical treatment to an understood condition, which conditions, beginning with simple evident matters like fractures, dislocations and evident tumors, have been gradually extended as we all know, to the hidden parts of the body and the brain, and refined to meet the newer conditions of our knowledge as extended by chemistry and the microscope. So we can truly say that as medicine becomes surgical, in this sense—learns the nature of the malady and directly corrects it, in other words applies the methods which surgery from the earliest days had to apply to be successful—so has medicine progressed.

Speaking of surgical handicaps, the ancient Greeks, even in Hippocrates' time, were not allowed to dissect dead bodies because of the religious belief that the soul wandered about unhappily in Hades, amid the taunts and ridicule of other disembodied spirits, unless the body had been buried with the proper rites to appease the Gods below. So Hippocrates' anatomy had to be gained from observation of wounds, fractures, war injuries, and above all, the external observation of the healthy body, of which the Greek plastic arts proved that the Greeks were past masters.

It was not until the Alexandrian period, that the enlightened policy of the Ptolemies gave the profession the right to dissect the dead bodies of criminals, that progress in anatomy was made, and ideas about the circulation and the nervous system began to be cleared up. The influence of the greatest naturalist this world has ever seen, old Aristotle, who was Alexander's teacher, may be seen in this. He knew, and his descendants knew, and God knew that direct observation was necessary to knowledge, and one of the greatest of Alexandrian anatomists was the great Erasistratus, his grandson. Associated with him was Herophilus, of the torcular Herophili. If you read about these days, the name of that mixing bowl and cross roads of the veins at the back of the head calls up the white-robed image of that brave, studious old white-robed doctor in the dissecting room in Alexandria (it was hot in Alexandria), eager for facts and finding them, and applying them as best he could to prognosis and treatment. It is good to have our anatomical terms remind us of such things as these, and it doesn't hurt what might be called pure anatomy a bit.

While there have been specialists since the very beginning—tradition has it that the two sons of Aesculapius, Machaon and Podalirius—who served as military surgeons to the Greek hosts during the war with Troy, the former skilled in the care and dressing of wounds and the other in the care of the sick, or internal medicine—the doctor and the surgeon were for the most part combined in the person of one man, and this continued down through the period of Roman medicine in the time of the republic and the earlier empire, of Celsus and Galen. Galen loved and revered Hippocrates. He studied anatomy and surgery in Alexandria, and he did wonderful, original work in anatomy, dissecting apes for much of his knowledge of this subject. His experimental demonstrations by ligation of the ureters, that they furnished the route for the passage of urine from the kidneys to the bladder; by ligation and opening arteries to show that they contained blood and not air; and his work on the nervous system, are well known. He was a surgeon, and successfully trephined the sternum to drain an abscess of the mediastinum. He had his troubles in getting anatomical material, and used to look around the cross roads for the bodies of dead criminals who had been hanged there, and along the banks of streams for the bodies of drowned persons. One reason for certain inaccuracies in his description of the muscular system was as stated above, that he was chiefly dependent upon the bodies of apes and monkeys for his knowledge. So great was his authority, however, and so thoroughly suppressed was the progress of science by the confusion of the dark ages, and the authority of the church, that his mistakes were not revealed until the early sixteenth century, when Andreas Vesalius, under the enlightened government of the Venetian republic, in the University of Padua, prevailed upon the judges in the courts to have condemned criminals executed on the day before his anatomical demonstrations, so that he could have the bodies fresh for his dissections before his classes. This young Belgian was only twenty-one years old when he was given the chair of anatomy and surgery at Padua, and had done his life's work at the age of twenty-eight, when he published his great work on the "Structure of the Human Body." Then, discouraged by the opposition to his views on the part of the Galenists, supported by the powerful authority of the church, he gave up his work to become court physician to Charles V, and though he lived to be fifty years old he made no more contributions to science. His great book the "Fabrica Corporis Humani," says Michael Foster, "is the beginning not only of modern anatomy but of modern physiology." To return for a moment to Greek medicine and surgery, it continued in practically the state that Galen left it until the Renaissance. Paul of Aegina, Oribasius and others, whose writings have come down to us, carried it down to the seventh century, A.D. Paul of Aegina, by the way, was a surgeon, and the great Arabs, Avicenna, Averrhoes, and others, wrote on medicine and surgery, but did little more than carry the Greek tradition through the middle ages, when war and the church not only stopped its progress, but put it far back into the domain of magic and superstition. We are accustomed to blame the authority of the church, perhaps unjustly, for the regression of medicine during the dark ages. But we must remember that the church

stood for authority, for tradition, for the written word, the Bible, and that, on the other hand, medicine is a science founded first of all upon the phenomena of life and death, and the structure of living man and living animals. In the middle ages this life here on earth was regarded as too unimportant for consideration. Our earthly life was but a pilgrimage and should be spent, as far as possible, in the preparation for, and the contemplation of, the life eternal. Authority of the scriptures was our guide to the latter; authority for the science of medicine was that of the ancient authors of medicine, especially Galen. His writings disappeared except for their perpetuation by the Arabs, and these, in translations through Syriac, Arabic, Spanish and Latin, were the best foundation for medical science at the beginning of the Renaissance, when the Greek texts began to be unearthed in the monasteries which had preserved them after their transportation from Constantinople, after the fall of the Roman Empire in the East. But even when accessible in the original, although they contained much truth, especially on the subject of surgery, we have seen, in our glance at the life of Vesalius, how much courage it took to place original observation in conflict with authority.

It was during the dark and middle ages that medicine and surgery became separated. The learned professor Sylvius who expounded the anatomy of Galen in the School at Paris would not soil his hands with dissection, much less with surgery, and employed ignorant barber surgeons to open and roughly examine bodies under his guidance, and perform operations, when necessary, on his patients. In the middle ages, doctors were learned gentlemen, surgeons were ignorant tradesmen who knew not their classics. The most learned of these men would not at first see emergency cases at all because they could not have their important studies interrupted or their lazy bodies stirred into action, by calls to see patients. Finally, some of them, the uranoscopists, got so lazy and dignified that they never saw patients at all, but had specimens of urine sent to them, examined them and sent the patients long Latin prescriptions based on their examination of the urine. So the better class of surgical operations fell into the hands of ignorant travelling operators, who could do a major operation and get safely out of town before the patient died; minor work fell into the hands of barber surgeons. Sometimes the native wit of a barber surgeon kept him high in his art. After all, literary knowledge is no substitute for native wit. Ambroise Paré, the barber's apprentice of Paris, by his wisdom and humanity became the leading surgeon of his time. He invented ligature of arteries on his own hook, but did not know that it had been used by the Romans and described by Celsus and Galen fifteen hundred years before. From such mistakes a knowledge of medical history will save us. As a result of the barber surgeon tradition, medicine and surgery are so separated in England today that many British doctors will call in a surgeon to tap a chest, and a surgeon feels insulted if addressed as doctor instead of mister.

Along with the barber surgeons there existed a small group of wound surgeons, who were educated men and learned in the teachings of Galen and Hippocrates. But they were often at a disadvantage, because they could not be the slaves of their medical confreres, who expected to say "do this" and have them do it, and be regarded by these same confreres as mere hands for their superior brains. Besides, the more learned surgeons were often confronted by the sad fact that travelling quacks often had more skill in certain operations than they. This was a natural result of the greater practice, in the case of such operations as stone in the bladder, or hernia. Rupture cutters and stone cutters often in these departments surpassed the regular surgeons, and yet, says Clifford Albutt, "surgery, though scorned by the high stomachs of the middle ages, has never been the child nor the companion of medicine, but the stone of the corner and the key to its true method."

Henri de Mondeville in France was an early champion of the union of medicine and surgery. He asked the learned medical men how they could direct the surgery of their ignorant assistants without practicing it themselves, and reminded them of the chapter in Aristotle's ethics to the effect that we learn the arts by the practice of them. He insisted on anatomy as the foundation of medicine. He declared that too much faith in books chokes talent, and he volubly resented the gibe that surgery is merely a handicraft. "If the mind must guide the hand in an operation, the hand instructs the mind in the knowledge of what it can do." He says: "If you operate upon the sick for a proper fee, and the poor for charity, you need not play the monk or make pilgrimages for your soul." The history of the connection of surgery and medicine through the middle ages is full of instances of surgical heroism, even of men who championed first intention against pus and washed wounds with wine or alcohol instead of oil. Surgery during those ages progressed farther than medicine, and the greater the surgeon, the more his devotion to humanity. We are back again to "where there is the love of man there is the love of the art," when we look upon Ambroise Paré, not only doing away with boiling oil and cautery in gunshot wounds, but working his head off in the hospitals of Paris during the dread visitations of the plague. By the way, the last paper Ambroise Paré wrote before he died was a treatise against the use of "Mummy" and "Unicorn's Horn" as remedies. Although much has been said about the heavy hand of the church in keeping back the progress of surgery, it is interesting to note

that in Italy, the very country of the Pope, the monasteries kept up such tradition as there was in surgery and medicine through the dark ages, and when the dawn of the Renaissance appeared, it was to Italy, to Padua, to Bologna, that the leaders of medicine went from England, Belgium and France, to become grounded in their studies. There went William Harvey, as well as Vesalius, and through the dark and middle ages, Italy, far more than Paris and Oxford, kept burning the torch of science.

During the middle ages, when medicine and surgery were most completely separated, medicine fell to its lowest depths. Observation had given place to magic, philosophy and the dangerous method of reasoning from analogy. With the sixteenth century there entered a new life and a new surgery, founded upon a new physiology of the circulation of the blood and lymph. But even during the seventeenth, eighteenth and early nineteenth centuries, physicians remained aloof from the surgeons, even from such men as Pott, Hunter, Hey and Astley Cooper. In my early days I can remember jealousy, on the part of physicians, of the surgeons who were, at that time, rapidly extending their art to deal with the abdominal organs and the brain. Patients had to suffer and die because medical men regarded surgeons as artisans who would operate for the sake of operating, and experiment on the patient. But the more discerning physicians, as well as the laymen, soon began to learn what our art could do, and those physicians who would take the trouble to watch the surgeon's work and follow it to its results, gained a knowledge of living pathology which has been the greatest contribution of surgery to medicine. Yet what right have I, a mere surgeon, to talk about the importance of surgery to medicine. It were more fitting that we should listen to the words of Clifford Albutt, that great physician and philosopher, on the relations of medicine and surgery. Speaking of the divorce of medicine and surgery and its results, this is what he says: (by the way, if you haven't read the book, get hold of it and read it, for the good of your soul!)—"Shall we wonder then that Medicine fell into sterility when, by most unnatural bonds, Surgery, her scientific arm, was tied behind her, when she was too squeamish for raw truth, when she turned her sight inwards from lusty nature to formulas? Shall we wonder that even in the eighteenth century when Medicine had begun tardily to occupy herself in the crafts of pathology and chemistry, one visionary after another, striding in long procession athwart the barren wilderness of physic, still wasted his generation in fastidious evasion of the things that happen, and in vain pursuit of vacuous unities! Happily, if, to the high stomachs of our medieval forefathers, surgical dabblings were common and unclean, still there remained some eyes curious enough and some fingers dexterous enough to carry the art back to the skill of Hippocrates and forward to the skill of Lister; and by the mouths of barbers and cutters, rather than of the pharisees of the colleges, Medicine breathed her lowly message to her children."

I wish I could write like that! Of course, we are all right now. We have associated in firms, clinics, and other forms of loose association, so that we leave the lungs to one, the abdomen to another, the nose and throat to another, and so on, and we have to be careful not to exhaust the patient's strength or pocket book on the multiple examinations and tests required. But in the serious cases involving the possibility of surgery, who must have the final decision of what shall be done? The surgeon, for his co-öperation of the brain and hand have taught him what he can do and equally important, or more so, what he cannot. And in the cases not involving surgery, who must have the deciding voice? The medical man, who has availed himself of the exact methods of chemical and microscopic diagnosis, which enables him to go at the cause of the disease in a direct, not to say a surgical, way. He may be an even greater craftsman than the surgeon. At any rate, he is employing the methods, which, down the pathway of the years, surgery has taught him. He has carried the methods which solved the simpler problems into the more complicated chemical and microscopic fields. As far as their principles are carried, we have a science and an art. Beyond these are the wanderings of fanciful and uncertain speculation. The great ruler of the universe seems to have frowned, at least as far as medicine is concerned, upon reason and speculation, when not firmly based on observed facts.

PSYCHIATRY'S PART IN THE PROPER CARE AND TREATMENT OF PRISONERS*

BY ALBERT WARREN STEARNS, M.D.†

THE last generation has seen tremendous strides made in advancing theories concerning individualized treatment of offenders. Historically, the psychiatrist has had a place of gradually increasing importance in these matters. Very early the courts decided that offenders found to be insane could not be held responsible for their crime. To give assistance in determining the responsibility or sanity of offenders was one of the earliest functions of the psychiatrist. The propriety of assigning this duty to specially-trained men has never been questioned. Whether or not psychiatrists have added distinction to their profession in this field has frequently been, and is still being questioned. However, with the ordinary cases of insanity one may say with a good deal of assurance that at the present time decisions are not questioned. The determination of responsibility in these cases has become largely a routine matter. The question of sanity is raised, doctors are appointed to examine for the court, and when they report that the offender is insane, he or she is usually sent forthwith to a hospital for mental diseases.

But there is a limit to scientific exactness and there are classes of cases still beyond the field of exact science. The responsibility of defectives, of unusual personality disorders, of various deliria and other confused states, is still open to debate. It is in these latter fields that doctors are pitted against each other in the legal arena, and so appear to be either stupid, dishonest or fanatical.

These cases receive a great deal of newspaper publicity and appear to be tremendously important. In my opinion they present little difficulty if highly trained, experienced physicians with a desire to do what is right are employed and are taken into the confidence of the court. Any decent man must revolt at being summoned to a trial post-haste, allowed to look at a man through bars for a few moments, and then hurried to a court room to express an opinion in which there is no stopping place between zero and one hundred per cent.

The conduct of criminals is frequently unusual and a few years' experience in a hospital for mental diseases does not fully equip a physician to perform all of the duties expected of an expert before the courts. I have frequently seen good friends rather violently disagree because they were not using the same language. The contemptuous attitude which many psychiatrists have toward the problems of the court shows ignorance of the real problems in which they are called upon to assist. In my own judgment, in the question of guilt the court has a perfect right to abide by time-honored customs as to what constitutes sanity, and the doctor should co-öperate in determining this. On the other hand, when it comes to disposition, the doctor has a perfect right to abide by time-honored and well-established methods of treating socially irresponsible persons who are not 100% insane, and the court should use his judgment freely.

A number of years ago the relation between mental defect and crime was brought forth. When I first studied the prison population at Charlestown, Mass., in 1915, and found an excess of feeble-minded over that in the general population, I felt that I had made a great contribution both to psychiatry and penology. Similar studies over the country were seized upon for purposes of propaganda by all the psychiatric societies, and for a while it really appeared as if the segregation of defective delinquents was one of the most important things to be accomplished. Extravagant percentages were received from many sources. Most of these high percentages were based upon psychological tests, which appeared to give so much exactness to our procedure. Since this time we have learned that wherever human failure or incapacity is found there is an excess of defectives. We have also learned that a very moderate intellectual equipment is compatible with a useful life. In my opinion, it is not the feeble-minded as such who constitute a prominent part of our criminal population, but the *neglected* feeble-minded. And so theories of procedure, based upon the segregation of individual defective delinquents, using intellectual level alone, are in my opinion unsound. It would seem to me much more important to commit, and so more or less permanently segregate, chronic offenders, whether their difficulty be due to mental defect, homo-sexuality, personality disorder or mere "characterial deviations." If we really start to segregate defective delinquents we must think in terms of thousands rather than hundreds, as we had in the past supposed.

The disadvantage of defective delinquent laws is that their administration is in the hands of so many people that it is very difficult to get uniformity. Our defective delinquent colony in Massachusetts has received cases of senility as well as cases of high intellectual levels. Furthermore, no one seems to know exactly what program should be followed with these defective delinquents once we get them in hand. The laws were put through on the basis that they should

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†Stearns—Commissioner of Correction for Mass. For record and address of author see "This Week's Issue," page 1264.

have special treatment. Until something is developed other than mere segregation I am in favor of handling small numbers. For this reason I am not in favor of extending the institutional care of this group at the present time.

The next problem which psychiatry has taken up is that of the unusual personality. Nearly a hundred years ago the theory of the moral imbecile was developed in England. It was believed that certain persons could be detected who were deficient in moral perception. This concept has been very useful in explaining the conduct of certain individuals, but has not been particularly helpful to the courts. As time went on the original concept was broadened and covered by the term psychopathic personality. This diagnosis implied emotional and volitional disorders rather than intellectual.

Further progress resulted in the use of the term "constitutional inferiority." This was later modified to "constitutional psychopathic state"; and recently we have been completely around the circle and now speak of "characterial deviates." Again, this concept is very useful in understanding certain types of human behavior. When a male child shows feminine interests and has female physical type and actually develops into an adult homosexual, the concept of the abnormal personality enables us to predict future conduct with a good deal of certainty.

Then the Kraepelinian classification of emotionally unstable, paranoid, and inadequate personalities is helpful in understanding conduct, but insofar as the administration of criminal law is concerned this concept has led to a great deal of confusion. Whereas it is generally agreed by reputable psychiatrists that these groups are legally sane, such diagnosis would give an opportunity for the exploitation of all manner of fantastic and ill-advised opinions before the courts. It has given an opportunity to develop theories of limited responsibility, usually to no good purpose. This group has been tremendously inflated. Psychiatrists who have little to do with criminal conduct have been so impressed with the strange, bizarre, extravagant conduct seen among prisoners that they have tended to disregard the situational factors. A recent study in New York State gives but 14% of criminals as normal, sixty odd per cent. of individuals being classed as constitutionally inferior. It seems to me at the present time improper to raise the question of the sanity of such individuals in determining guilt. However, intelligent judges ought to be glad to know the data on these cases for use in determining disposition.

Lastly, the clinical study of conduct by psychiatrists and the application of the psychiatric technique to the problem of conduct has developed a wealth of information concerning personality traits, conduct patterns and human motives. In my earliest study of the inmates of the Charlestown State Prison, the old division into crimes against the person, against property and against public order showed little that was helpful concerning individuals, and yet a division into sex offenders, thieves and murderers later adapted by Glueck, at Sing Sing, into procreative, acquisitive and pugnacious instincts, was very helpful in classifying individuals and their motives.

But psychiatrists should not claim a monopoly in the field of human conduct. Wise prison officials, clergymen, lawyers, school teachers, judges, probation officers, social workers, executives,—in fact, all humanity with wisdom and experience are equipped to form judgments in these matters. And it is mere arrogance for psychiatrists to claim this field as theirs exclusively. The personal qualifications and experience of a psychiatrist are more important than his technical skill when he goes outside the realm of mental disease, and psychiatry as such is not an adequate basis for a specialized opinion in conduct not due to mental morbidity.

Psychiatry has contributed much to penology. Most important of all, it has developed a method of study. This method of study consists in diagnosis and treatment, but diagnosis is often social. A great many of the commonplaces of psychiatric treatment in institutions for the insane might well be applied to the penal institutions. It is customary to meet emotional outbreaks in prison by rather harsh punishment and such individuals are regarded as disciplinary problems. This is often like pouring kerosene on the fire. Gentleness and friendliness are frequently better than discipline in these most troublesome cases.

The treatment of delirium tremens in padded cells is a poor commentary upon the lack of specialized knowledge in dealing with such cases. Padded cells have not been used for a generation in hospitals for the insane, but are still classified as "humane methods" in codes of prison rules.

In the organization of a penological service the psychiatrist certainly has a place. Scientific training does not produce an immunity to the acquiring of practical knowledge; neither does it insure administrative wisdom. At the present time there is a shortage of well-trained psychiatrists. It is futile to talk of attaching such to all jails and courts, as well as schools and other institutions. They should be used as instruments of precision by carefully trained laymen. I believe a prison should be organized on a line and staff basis. The line officers should hold the military situation, man the fortress and be in ultimate control; but they should have staff officers who should have certain special functions. Among others I would have a sociologist with clinical training. He might be called a personnel officer. His work would be to establish first of all an adequate case history system by which sufficient data would be collected on every admission. There should be a concrete state-

ment of the sociological problem involved and a plan made for each individual while in prison, looking toward his ultimate discharge. The importance of formal education and vocational training has been exaggerated. A relatively small percentage of prisoners really need either of these procedures. What they do need is to have an individual with adequate assistants who shall deal with their personal problems, whatever they may be, and assist them in planning their affairs. This department should also make immediate contact with friends and relatives and attempt to organize the entire resources of the community in the succor of the prisoner and his family. Such an individual should not in any sense replace the warden, but should be his right arm. At the present time the industries occupy the center of the stage in well regulated prisons. As important as are these industries, the first purpose of the whole penal procedure is to deal with human beings. This should not be done casually and occasionally, by overworked and hurried officialdom, but should be done deliberately and intelligently by individuals with special training, who have no other function than to do this part of the work well. Until such a procedure is carried out we cannot say that we have made a beginning in carrying out individualization of treatment. Needless to say, the doctor and the chaplain should be part of this professional staff. Instead of being loaded up with perfunctory duties involving the post office, the library, athletics, entertainments, etc., the chaplain should be encouraged to carry the application of personal religion to a point rarely seen in the prison. The doctor, besides being a health officer and a family physician, should also be the next friend and advisor of the inmates.

These three, the personnel director, the chaplain and the doctor, serving under the warden or superintendent, should pool their efforts to salvage a larger percentage of human problems than is now being done.

A case history system built up by this method would have many uses. In the first place, practical, concrete research would be made possible. Next, the handling of the man while in prison would be facilitated. Without this the Board of Parole is doing its work blindfolded. Again and lastly, the availability of such a record would tie up the prison service with social welfare work in general, so that wherever this man or his family became a problem, data would be available enabling wise decisions to be made.

It will be necessary to use psychiatrists for purposes of research. They must frequently be used as consultants. The results of their intensive work should be applied immediately by prison executives, but criminology and psychiatry are not synonymous terms and it will not be necessary, in my opinion, to train psychiatrists with the idea of taking over the whole problem.

GRADUATE COURSE IN CANCER

CANCER OF THE BREAST*

BY R. B. GREENOUGH, M.D.,† AND E. M. DALAND, M.D.†

WE are asked in giving these clinics to lay emphasis especially on the early symptoms of cancer in its various situations, and the methods to be employed in establishing a diagnosis.

In the vast majority of cases of cancer of the breast the earliest symptom detected by the patient is a lump in the breast, discovered usually accidentally rather than because of any pain directing the patient's attention to the spot.

In some cases, perhaps 25%, some feeling of pain or tenderness attracts the patient's attention, but this is the exception rather than the rule. In a few cases some external change in the shape of the breast is the first thing noted; either a swelling, or dimpling of the skin, or retraction of the nipple. In very rare cases enlargement of the axillary glands may be detected by the patient before the primary tumor in the breast is discovered at all.

The lump that is felt in the breast may be of very small proportions or there may be a wide infiltration of the breast tissue which involves a large part of the gland. The consistency of the lump is usually hard and somewhat ill-defined, in contrast with the more or less elastic and sharply defined tumor produced by the adenofibroma of a young woman's breast or the cysts which occur in women of older years.

Next to the presence of a lump in the breast, the early symptom most characteristic of cancer is the loss of free mobility overlying the skin over the tumor. This can be demonstrated by moving the breast with the tumor on the chest wall, which readily develops a drag of the skin above the tumor even though at rest this drag is not perceptible. As the disease advances actual involvement of the skin with tumor formation and ulceration may occur, and extension to the surrounding tissues, especially the axillary lymph nodes, as well as through the blood stream, and direct extension to more remote regions, such as the chest wall, the pleura, lung, liver, and the bony skeleton.

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If we are to recognize the early cases, however, the presence of a lump in the breast with slight loss of mobility of the skin above it are the most important signs. The common rule is to suspect cancer in any case in which a tumor is present in a woman over thirty-five years of age. In many such cases, however, a positive diagnosis can be made only by an exploratory operation, and in case of cancer of the breast, an exploratory operation must be performed in such a way as not to jeopardize the patient's chances of radical cure if cancer is found to be present. It is for this reason that the removal of a small suspicious tumor from the breast with closure of the wound and the delay of one or two weeks to obtain a pathological report on the tissue is universally condemned. Such a procedure almost invariably leads to so rapid an extension of the disease that the most extensive operation performed two weeks later fails to cure the patient. It is in this group of cases in which the immediate frozen section diagnosis becomes an absolute necessity, and an exploration can in this way be conducted which involves no danger to the patient of failure to cure the disease.

In any doubtful case the patient should be prepared both mentally and physically for the radical operation before the exploratory operation is performed.

Under anesthesia a direct incision over the tumor is made, and the tissue inspected. In many cases the gross appearances are diagnostic, but in case of doubt a piece of tissue can be removed for frozen section and the wound immediately packed with formalin gauze to await the report. If the report shows cancer, the wound is closed. A fresh lay-out of dry-goods, gloves, and instruments is used and the radical operation is performed without entering the exploratory area. If the report is non-malignant, the formalinized tissue is excised and the wound is closed. It has been our experience that this procedure involves no risk of spreading the disease.

SELECTION OF CASES FOR OPERATION

Of course, the ideal case for operation is one in which the tumor is confined to the breast. However, if the axillary glands on the same side are involved and if the glands are freely movable, operation is still indicated, although hope of cure is not good. If there is involvement of the supraclavicular glands, the opposite breast or axillary glands, lung, pleura or mediastinum, enlargement of the liver, or bony metastases, operation is out of the question. X-ray studies should always be made of the lungs and in many clinics there is a routine x-ray examination of the spine, pelvis, femora and humeri before operation. We believe dissection of the supraclavicular region is rarely if ever successful and we do not advise it.

Cases falling into these latter groups can best be handled by x-ray. Then there will be certain others in whom operation is contraindicated because of age or physical defects and these will fall into the x-ray group.

Occasionally it is justifiable to do a simple amputation of the breast to remove an offensive, discharging tumor. If the axilla is not to be thoroughly dissected with a good chance of cure, it should not be touched, for there is likely to be a rapid increase in growth in any cancer cells left, with swollen arms and pain. In these cases x-rays should be used as soon as the wound has healed.

THE RADICAL OPERATION

The successful operative treatment of cancer of the breast consists of far more than the removal of the breast. Of course, the whole breast must be sacrificed together with all the skin over it. Beneath the breast the deep fascia contains a dense network of lymphatics through which cancer cells spread to the liver, the opposite breast, the pleural cavity as well as the axillary and supraclavicular glands. This fascia lying beneath the breast must be removed down to the ribs and intercostal muscles. The pectoral muscles form the anterior boundary of the upper axilla. Unless they are removed the axillary glands can not be thoroughly removed. Indeed these muscles themselves frequently contain cancerous deposits although clinical examination does not show it. It is our practice to remove that portion of the pectoralis major which arises from the chest wall and sternum and to leave the clavicular portion. The entire pectoralis minor muscle is removed. The contents of the axilla with the exception of the axillary vessels, the long thoracic nerve and sometimes the subscapular nerve, are removed, and the dissection is carried beneath the axillary vein and up to the level of the clavicle around the vein.

The operator should remove as much of the skin over the breast as is necessary, regardless of whether he is going to be able to close the wound or not. Frequently it is necessary to leave an open area to be skin-grafted at a later date.

At the present moment we are not using prophylactic x-ray treatment in our operative cases of cancer of the breast. It is unfortunate that we have to wait so long to learn the end-result of any method of treatment in cancer, and especially is this true in cancer of the breast. It is possible that with more modern methods of treatment, prophylactic x-ray treatment may again become popular, but we have reviewed the cases which have been treated in 1918, 1919, and 1920, both in this hospital and in other clinics, and we find no appreciable benefit resulting from the treatments given at that time. No larger proportion of cases remain well beyond the five year follow-up period. There is no indication that local recurrence in the scar is less frequent, or that the life of the patient is prolonged in cases which fail of cure.

Against post-operative prophylactic x-ray

treatment, no serious objection can be urged except the expense and discomfort to the patient and the possible damage to the skin from overzealous radiation.

Against pre-operative radiation two objections can be urged;—first, the wound healing is unfavorably influenced; and second, a certain amount of delay is thus made necessary, before the operation can safely be performed.

While this is true as regards prophylactic x-ray treatment, we still have abundant evidence that x-ray treatment for actual recurrence in cancer of the breast is an effective measure and we find that our cases live longer and are more comfortable under x-ray treatment, although as a rule they are not cured of the disease.

It is probable that the reason why prophylactic x-ray treatment is not more effective depends upon the fact that much smaller doses must of necessity be employed when we are covering a wide area, than when we are directing our energies at one small area, where protection of the skin becomes of a secondary importance.

The present policy of the Massachusetts General Hospital is to follow up cases of cancer of the breast at frequent intervals and to withhold x-ray treatment in favorable operative cases until or unless some definite recurrence or focus of disease is known to be present.

RESULTS

Of all patients with cancer of the breast entering the wards of this hospital or any general hospital each year, but 15% will be alive and free of disease at the end of five years. Certain cases are too far advanced even to attempt an operation. Of those operated on, there are about 30% five year cures. Patients who have involvement of the axillary glands stand a 20% chance of a five year cure, while those free from all disease except in the breast will stand from 65 to 75% chance of being well after five years. Two or three out of every hundred cases will develop a metastasis after the five year period. The figures given here hold for Boston hospitals as well as for those in a number of other cities where end results have recently been studied.

BONE SARCOMA*

BY CHANNING C. SIMMONS, M.D.†

THE term "Sarcoma of Bone" was formerly very loosely applied to a large group of bone tumors. In 1921 a study of the Massachusetts General Hospital records revealed 148 cases catalogued as "Bone Sarcoma." In reviewing these, however, it was necessary to exclude 82 as being either metastatic cancer, sarcoma—primary in the soft parts and involving the bone secondarily, non-malignant tumors, or inflammatory conditions. The names applied to the various sarcomas were also very cumbersome and confusing.

In 1921 Dr. Codman instituted the Registry of Bone Sarcoma, to which all cases of sarcoma were to be reported, the object being to obtain a sufficiently large number of cases to allow careful study. This Registry was later taken over by the American College of Surgeons and put in the hands of a committee composed of pathologists and clinicians. The first problem that confronted the committee was that of adopting a suitable nomenclature, and after considerable study, the classification suggested by Ewing was approved with certain modifications. This classification leaves much to be desired, but it is the best as yet brought forward.

The term "Osteogenic Sarcoma", originally suggested by Ewing, was adopted for the ordinary form of malignant bone tumor. Osteogenic sarcoma means a tumor derived from embryonic mesoblastic cells which under ordinary conditions would have formed normal bone. Embryonic fibroblasts are capable of differentiation into many forms of adult tissue, such as bone, osteoid tissue, cartilage, myxomatous tissue or muscle. The less differentiation seen in the cells, the greater the malignancy of the tumor. If this conception of a bone tumor is borne in mind, it will account for the various forms of tissues found in these growths and obviates the necessity of applying the descriptive adjectives "myxo, chondro, osteo, etc." These comprise the largest group of malignant bone tumors.

Three other forms of primary malignant tumors of bone are recognized; namely, (1) Ewing Sarcoma or endothelial myeloma, which involves the shafts of bone rather than the epiphyseal ends and was formerly called "small round cell sarcoma." (2) Multiple Myeloma. (3) Angioma, a rare malignant bone tumor. A fourth form, Unclassified Sarcoma, may be included to cover those cases which it is impossible to place in any of the above groups. A working classification of the bone tumors is herewith appended.

Occasionally sarcoma arises in the outer fibrous layer of the periosteum and involves the bone secondarily. This is not a true bone tumor and the prognosis in these cases is much more favorable than in the usual type.

Giant cell tumor is a form of bone tumor which originates in the medulla of the epiphyseal end of the long bones, causing bone destruction. It is essentially a non-malignant tumor.

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although in certain instances metastases have occurred. Whether these should be considered as true tumors, an inflammatory condition, or a defective process of repair, is still under discussion.

CLASSIFICATION OF TUMORS OF BONE

A. *Tumors originating in bone.*
1. Osteogenic Tumors
   Benign
   Osteoma
   Chondroma, etc.
   Malignant (Osteogenic sarcoma)
   Periosteal
   Sclerosing, etc.
2. Benign Giant Cell Tumor
3. Ewing's Sarcoma
4. Angioma
5. Myeloma

B. *Other tumors of bone*
6. Metastatic Tumors
   Cancer
   Hypernephroma, Chordoma, etc.
7. Parosteal Fibrosarcoma
8. Odontoma
   Adamantinoma
   Dentigerous Cysts, etc.
9. Inflammatory Conditions
   Subperiosteal Haematoma
   Bone Cyst (osteitis fibrosa cystica)
   Pagets, etc.

SYMPTOMS

Osteogenic sarcoma is essentially a disease of young people. There is often a history of trauma. The tumors arise at the epiphyseal ends of the long bones causing bone destruction and new bone formation. They are of relatively rapid growth and metastasize at an early date to the lungs, rarely to the glands. The usual history is of a slight trauma followed by pain referred to the joint, and later tumor formation. There is usually a similar history in the cases of benign giant cell tumor, but the rapidity of the growth is much less. The diagnosis should be made on the X-ray appearance. In osteogenic sarcoma there is bone destruction and new bone formation, the appearance often being somewhat suggestive of osteomyelitis. In giant cell tumor there is central bone destruction without bone formation and with distention of the cortex. The disease is usually quite definitely localized. In the Ewing sarcoma, the X-ray shows a worm-eaten appearance of the bone, usually of the flat bones or of the shaft of the long bones rather than of the epiphyseal ends.

The prognosis of osteogenic sarcoma is distinctly poor, permanent cures not being obtained in more than eight or ten per cent. of the cases. The treatment lies between amputation and radiation. In the ordinary case, amputation is to be preferred to radiation treatment as it offers the best chance of permanent cure. If there is evidence, however, of lung metastases as shown by the X-ray, it should not be practised except as a palliative measure. Treatment by X-ray or radium packs may be used and will often delay the rapidity of the growth, but permanent cure is not to be expected. The introduction of needles or of seeds of radium emanation should not be practised as the resulting osteomyelitis is painful and the wounds difficult to heal. Coley's serum has been advocated in the treatment of bone sarcoma, but others have not been able to obtain the results claimed by Dr. Coley.

Ewing Sarcoma: These cases react in a remarkable manner to radiation treatment; the tumors disappear and new bone is laid down. On the other hand, recurrence in other bones is to be expected and although there are a few reported cures, the prognosis is bad. The expectation of life, however, is slightly longer than is osteogenic sarcoma and the percentage of cures by amputation somewhat greater.

Giant cell tumor: The treatment, as this is in the majority of cases a non-malignant tumor, lies between radiation by the use of X-ray and a minor operation, such as incision, curetting, and swabbing out the cavity with carbolic acid. Cures have been obtained by both methods of treatment, although a few cases of metastases have been reported following both curettage and radiation treatment. At the present time the tendency is to employ X-ray treatment unless the growth is in a very favorable position for resection or curetting. It may be necessary to perform amputation if there is much bone destruction and deformity.

MEDICAL PROGRESS

PROGRESS IN LARYNGOLOGY

BY GORDON BERRY, M.D.* AND LE ROY A. SCHALL, M.D.*

Introduction:

IT has been estimated[1] that 4670 physicians in the United States limit their practice to diseases of the ear, nose and throat. Six national organizations, besides innumerable district and local societies afford an outlet for scientific discussions. Limits of time and space prevent a complete review of these articles. It is our endeavor to give the gist of the more important papers that have appeared in the American laryngological magazines of late. The bibliography at the end will permit the reader to carry forward such detailed investigations as he may desire.

THE NOSE

Nasal Ciliary Action

McDonald and his co-workers[2] studied the action of the ciliated epithelium of the frog, and found that it is subject to acceleration through stimulation of the parasympathetic nerves. It is also accelerated by the sympathomimetic chemicals, epinephrin (adrenalin) and ephedrin, and retarded by the para sympathomimetic chemical, pilocarpin. Atropin gives mixed effects, accelerating the cilia apparently by parasympathetic blocking, but also slowing propulsion by drying and thickening the moisture upon the cilia. Ciliary action is absolutely dependent for function upon a surface film of moisture, being retarded and then paralyzed by a gradual dehydration. This holds true also for the cilia of the respiratory system of mammals. The effect of cold is a slowing and finally a paralyzing of the action of ciliated epithelium and was abundantly verified for both amphibian and mammal. Excess of moisture modified the extent and direction of ciliary propulsion by causing gravity currents which flowed above the currents the cilia produced, and in a direction determined by the shape and position of the part.

Nasal Ganglion nerve paths

In an interesting discussion of the intricate paths that facial nerve stimuli may follow, Ruskin[3] reminds us that this is through the pars intermedia of Wrisberg, by the great superficial petrosal to the nasal ganglion. Cocaine applied to the nasal ganglion will paralyze out along this path to the geniculate ganglion or along the small superficial petrosal to the otic ganglion or by the chorda tympani to the tongue. But a previous injection of alcohol to the nasal ganglion will block the action of cocaine along these paths. The symptom results are equally intricate whichever paths are involved and a nerve block of the nasal ganglion may control such apparently non-related manifestations as epiphora after a lacrimal-sac operation, rhinorrhea and sneezing, salivation, herpes zoster of the auricle or down the neck along the distribution of the posterior auricular branch of the facial or the auricular branch of the vagus.

Another sensory path was demonstrated by Hansel[4] in a case having an abscess at the base of the tongue. Pain was referred to the ear and pharynx. This pain was controlled by cocainization of the nasal ganglion. The abscess came to a head, was incised and cleared.

Ruskin[3] states that in tumors of the cerebellar pontine angle or in acoustic tumors, involvement of the sensory root of the facial nerve may be an early symptom simulating neuralgia of the nasal ganglion and giving rise to a burning sensation at the tip of the tongue, disturbances of taste along the side of the mouth, a fullness and scratchy feeling in the throat and itching of the roof of the mouth. The symptomatology may occur with other lesions affecting those fibers of the facial nerve that pass through the great superficial petrosal nerve.

Ozena

For ozena Steinmann[5] has been narrowing the nares by transplanting septal cartilage into the septum. In 14 cases, he reports 4 good results, 5 fairly satisfactory and 5 failures. (Some prefer ivory for their transplanting material.)

Sarcoma of the nose

Coughlin[6] reports a case of sarcoma of the nose in a coal miner 35 years of age. The growth began as a slight painless swelling at the root of the nose and the symptoms complained of were a persistent frontal headache and a profuse muco-purulent nasal discharge. Wide removal of the growth was followed by a subsequent reconstruction of the nose, with the patient apparently well after four years.

Photographs of rare lesions

Meeker[7] presents an unusual series of excellent micro-photographs of rare lesions of the nose and throat. Among the lesions shown are parakeratosis of the tonsil, tonsillitis of cholesterol crystals, xanthoma, pigmented nevi of tonsils, encysted trichina at the base of the tonsil, nasal polyp filled with necrotic tissue and cholesterol crystals. He summarizes that the lesions illustrated serve to call attention to certain of the less common pathological processes

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encountered in the routine examination of a large number of tonsil and miscellaneous nose and throat material. It may be said that most of these lesions are of minor importance. In several instances, however, the clinical diagnosis depended upon the microscopic findings. In other instances a diagnosis could only be made from a consideration of the embryological development.

PARANASAL SINUSES

The effect of aqueous solutions on the sinus mucous membranes

To determine the effect of aqueous solutions on the upper respiratory tract Stark[8] irrigated the nasal fossae of 24 rabbits with 0.9 per cent. sodium chloride solution at a temperature of 40° C; and eight healthy rabbits were used as a control. Irrigations varying from 3 to 24 were made daily. Examinations were made in some instances a few moments after irrigation; in others, twenty-four hours afterwards. At necropsy 75% of the rabbits irrigated were found to have muco-purulent secretion in the nasal fossae and in the para-nasal sinuses. The animals examined from 15 to 20 minutes after irrigation showed that the para-nasal sinuses on both sides were filled with irrigating fluid, whereas the sinuses examined 24 hours after irrigation were clear of irrigating fluid. Of the 18 rabbits having muco-purulent sinusitis, the sinusitis was on the right side in 3, on the left in 4, and bilateral in 11.

The reaction of the nasal mucous membrane to 2 per cent. sodium chloride solution and to tap water was more marked than the reaction to the 0.9% sodium chloride solution. Varying degrees of change were noted microscopically in the mucous membrane: hyperemia with marked leukocytic infiltration, increased glandular activity, and an increase in the size of the vacuoles in the epithelial cells.

Microscopic Pathology

In an attempt to correlate the pathology found in the accessory sinuses with the symptoms, either local or general, Mullin and Ball[9] conclude that no constant finding is present which will enable one to correlate a definite group of symptoms with the pathologic findings. They divide the histologic findings into four groups, according to the presence of 1st edema, 2nd fibrosis, 3rd leucocytic reaction and 4th glandular hyperplasia or atrophy. This classification greatly simplifies the chronic inflammations of the antral mucous membrane and is in keeping with our studies.

Simpson and Harris[10] likewise studied the histologic sections of their sinus cases and their findings correspond with those of Mullin and Ball[9]. The authors were unable to corroborate the connection that some have granted between eosinophilia and allergy and, in their series, the changes in the periosteum and bone were not marked.

Sewall[11] confirms the work of Watson-Williams in the cytologic examination of washings of the maxillary and sphenoid sinuses. He believes that the finding of polymorphonucleal cells in the washing is indicative of disease. He inserts a no. 16 straight needle without a handle, through the inferior meatal wall into the antrum. If suction brings no return after first making sure that the needle is patent and its point free in the antrum, he injects 5-10 c.c of warm sterile water or isotonic solution, then withdraws this solution. If the fluid is sufficiently contaminated, it is examined on a slide. If not, it is centrifuged and then examined. "Normal antra show no cellular content of an inflammatory nature; a low-grade infection is productive of mononuclear leucocytes; while the more active processes furnish either polymorphonuclear leucocytes alone, or polymorphonuclear mixed with mononuclear cells."

Antrum membrane regeneration

It has been the accepted dictum of all laryngologic teaching that when the mucous membrane of an accessory nasal sinus was removed, it was replaced by scar tissue. This belief is constantly quoted as the reason why diseased antral mucosa should not be removed. Knowlton and McGregor[12] have been the first to study the question scientifically. By operating on dogs, they demonstrate by autopsy and histologic sections that in one month's time epithelial regeneration is well established and bone formation begins. Three months afterwards, epithelial regeneration is complete, and the canine fossa operative opening is nearly filled in with bone. Five months afterwards, gland formation is well established in the mucous membrane and the muco-periosteum looks almost normal. Sections studied after secondary operations, in man, showed the same regeneration of the mucous membrane. (This promises to settle a long debated point and is an important contribution.)

The upright position for the radiographic examination of the nasal accessory sinus is recommended by Israel[13], Allen[14], and Proetz[15]. Proetz continues his study of radiography of the sinuses by means of contrast media, and points out the errors to be avoided. He believes that most errors in sinus diagnosis by means of fluid contrast media are the result of unfamiliarity or inexperience with the method and are not due to any shortcomings of the method itself. Certain surgical precautions should be followed, such as are observed in inspecting fluids in any other translucent container. Partial filling and the horizontal beam with a vertical X-ray plate or film have proven most satisfactory in his hands. He uses a 50% oily solution of lipiodol and is thus able to secure knowledge as to the size and shape of the different cells, as well as their ease in filling and

emptying. In connection with this emptying phase he reports a new development in his technic. By coloring and scenting the lipiodol, the patient can himself determine when the oil has completely drained out of the antrum. This indicates the patency of the sinus ostia and the activity of the cilia. Then a check-up X-ray should be taken to determine whether the sinuses are now empty. He uses a ½% solution of fat soluble chlorophyl in olive oil or liquid petrolatum. To one ounce of this oil he adds two drops of the oil of cinnamon. The resulting oil is kept in stock and used with an equal part of full strength lipiodol for his injections. The chlorophyl coloring is easily noticed and the odor of cinnamon can be detected even as weak as one part in a million (.00106 grams in a liter).

Dental caries as a causative factor in antrum infections

Berry[16] disagrees with the teaching that only 8 to 20% of maxillary sinus infections are of dental origin. He estimates the correct relationship in adult forms to be 60 per cent. or even higher. He arrives at this conclusion through an intensive study of 152 consecutive cases of maxillary sinusitis. The alveolar processes as well as the sinuses are transilluminated. This he does with a simple dental lamp. Where there is apical pathology, the lamp almost invariably shows a shadow. The patient is sent to a dental roentgenologist for review as to whether these teeth are vital, what the relationship of the floor of the antrum, whether any abscess can be demonstrated. He finds that the absence of such an apparent abscess does not prove an innocent tooth, for infection may be seeping through a small fistula directly into the nearby antrum.

Cysts of the antrum

McGregor[17] studied cysts of the maxillary sinuses and concludes that they are infectious in origin and occur only in the presence of a pathological process.

Paranasal Sinusitis—Clinical

Symptomatology of maxillary sinusitis

Israel[18] discusses the symptomatology of chronic maxillary sinusitis and advises two general clinical classifications as to the etiology: first, the larger group who gave a definite history of nasal pathology following an acute headache or rhinitis and second, those patients who were unaware of a pathologic condition other than a slight amount of postnasal secretion, and were referred for examination for a possible focal infection. According to the histo-pathology he classifies the chronic inflammations as exudative and productive. The productive inflammations are further subdivided into hypertrophic and hyperplastic. The article is beautifully illustrated by microphotographs of antral pathology. Although he advises the Denker operation as the most certain and reliable means of permanent relief and as the operation of choice, he cites no proof for his statement.

In a practical lecture delivered before the New York Academy of Medicine, Harris[19] emphasizes 1st: that in the vast majority of cases acute sinusitis is an attack of an acute rhinitis, and so is an exceedingly common affection; 2nd: that the most common form of acute sinusitis is the catarrhal type which, on account of the mildness of the symptoms, can be easily overlooked; 3rd: that the secretion varies in amount within wide extremes and not rarely drains entirely into the throat; 4th: that the acute sinusitis in children is a common occurrence and often passes unnoticed; 5th: that the sinuses are always to be considered as a focus of infection; 6th: that it is important to institute suitable treatment to prevent the case from becoming subacute and chronic; 7th: that every precaution should be made against an extension of the infection.

Nasal Sinusitis in deafened children

One hundred deafened children in the New York schools were made the subject of an intensive study by Fowler[20]. 11 had nerve deafness and the remainder showed a suppurative otitis media in which 5 were active, 37 were healed, 34 were recurrent and 13 were chronic. The ages were between 3 and 19 years with an average of 11 years. All had stereo-roentgenographs by Dr. F. M. Law and the results of their study are the subject of this paper. 57% showed moderate or severe involvement of the nasal sinus spaces; 71% showed pathological changes (osteitis) in the bony septa between these sinus spaces; 87% some kind of pathology in the sinuses. As all but four of this series of one hundred showed some evidence of a present or past suppuration in the ears, it is concluded that the nasal infection had a direct bearing on most if not all of these deafened ears and that an early proper care of the nose becomes intimately associated with the prevention, alleviation and cure of these deafened forms. In some cases, surgery was necessary, but in most cases, medication gave excellent results. The usual procedure was the periodic nasal instillation of 1½% ephedrine in a neo-silvol solution.

PARANASAL SINUSITIS—SURGICAL

Diagnosis and treatment of chronic antrum infections

Skillern[21] comments on the care of chronic antrum infections. If after daily saline irrigations for one week, "the condition remains the same, one can almost rest assured that permanent pathological changes have taken place in the mucosa and we can continue our irrigations until doomsday and still be in the same place we started or even worse". The repeated in-

troduction of the antrum needle may be proving a local source of irritation and may even bring on an acute exacerbation. He once estimated that 20% were of dental origin. He is inclined to place the figure a little lower. He feels that an antrum infection may work down to the tooth as well as a tooth infection work up to the antrum.

When the week of irrigating has failed he recommends a free intranasal opening under the inferior turbinate without removing any of the inferior turbinate bone. He uses a Wilhelmiski spear trocar, under gas anesthesia. He seeks drainage and aeration. Ordinary antiseptics for irrigating the antrum through this opening have not proved effective in his hands. He uses 50 to 95% alcohol, in ascending strengths. This dehydrates, is antiseptic, penetrates the mucous membrane. This does one of two things: makes them better or makes them worse. Either result is soon determined and procrastination is avoided. A second method is the use of silver nitrate, 30 to 60 grains to the ounce. This is slower in its action and may quiet the acute infection, only to have the trouble recur when the medication is discontinued. If these procedures do not cure, a radical operation should be undertaken. He prefers the Caldwell-Luc operation. He formerly employed the preturbinal method espoused by Canfield and others but discarded it as not thorough enough. He also gave up the Denker operation because it weakens the bony structures of the face.

Humtoon's Antibody's Solution for a complicating pneumonia

In a report of a fatal case of pneumonia following an external frontal sinus operation, Skillern[22] discusses the use of Humtoon's antibody solution. It contains a certain amount of serum and it is therefore best to first test the patient by an intradermal injection. 50 c.c. are given intravenously on the day of the operation and the same dose is repeated the next day. He suggests its use when one is operating on a sinus in the presence of a pneumococcus infection. It is designed to check a pneumonia at its onset.

In the discussion of this paper, Fenton recommended the use of local anesthesia in all cases where such a pneumonic complication might occur, with an initial dose of scopolamin and morphine. For walling off the operative area, Mosher favored a postnasal plug, while Skillern never uses this but packs the nose from in front and uses suction where needed.

Osteomyelitis of the Frontal Bone

Shea[23] reports two cured cases of osteomyelitis of the frontal bone. The first followed an acute sinusitis and the second followed an external operation for chronic sinusitis.

Tuberculosis of the antrum

Jones[24] reports a case of tuberculosis of the maxillary sinuses with an apparent cure.

PARANASAL SINUSITIS—INTRACRANIAL COMPLICATIONS

Pathways followed by the sinus infection

From a study of 20 cases of intracranial complications following diseases of the accessory sinuses, Turner and Reynolds[25] found that the frontal sinus was responsible for the intracranial complication in five, the ethmoidal cells in six and the sphenoidal sinus in nine. In 17 instances direct extension of the inflammation through the osseous wall of the diseased air sinus constituted the pathway of infection to the intracranial structures. This was obvious to the naked eye in 15 instances.

The avenues of intracranial infections have been studied also by Pratt[26]. He classifies the pathways 1st: those left open by embryonic dehiscences as in the ethmoid bone, the basi pharyngeal canal to the sella turcica and the petro-squamous fissure from the tegmentum tympani, 2nd: paths by continuity of diseased soft tissue and osteomyelitis, 3rd: venous pathways taken by infection of the face, nasal cavities, mouth and pharynx, causing anterior or posterior thrombosis of the cavernous sinus by retrograde thromophlebitis, 4th: direct infection by a septic blood stream, 5th: pathways opened by surgical trauma giving direct communication to the meninges, or injury of the olfactory nerves, 6th: pathways of otitic infection, 7th: the part played by lymphatics.

Frontal Lobe Abscesses

Imperatori[27] reports five brain abscess cases complicating frontal sinusitis. All were under 28 years of age; all had an acute fronto-ethmoiditis; one was by metastatic infection, the rest were by direct extension; in all, the abscesses were located at operation which was by the external route; all were in the frontal lobe, one was anterior, three were near the cribriform, one was posterior; all showed a staphylococcus aureus infection, and had a leukocytosis of over 15,000.

A summary of the prominent symptoms gave the following:—headaches, more at night, on the affected side; occasional vomiting; chemosis, and eye-ground changes with an optic neuritis when the abscess is localized; a high temperature toward morning, with parallel changes in the pulse rate, but a pulse that was not slow in any case; insomnia and poor memory; convulsions; tactico-optical aphasia; diminished abdominal reflexes, contralateral to the lesion; usually an exaggerated knee jerk and ankle clonus. Two died, at six hours and at one week after the operation. Three lived.

Optic Nerve Disturbances

a) Due to a nearby or remote focus of infection.

One of the last articles of the late Leon E. White[28] deals in detail and at length with the location of the septic focus in optic nerve dis-

turbances from infection. He summarizes: that some focus in the body is responsible for the optic nerve lesion arising from infection. Invasion is through the blood stream. The accessory sinuses supply but an insignificant number of the foci. Dental infections are easily overlooked. Devitalized teeth are a potential source. The tonsils are frequently responsible. Most of the foci are found in the teeth and tonsils. The antrum among the sinuses is the most frequent seat. The sinuses from their priority of investigation, have occupied the attention of rhinologists too long to the exclusion of other more frequent sites of infection. A thickening of the antral mucosa without secretion may be a sufficient focus to warrant surgical intervention. The infection may be in remote regions of the body: in the appendix, the prostate, the fallopian tubes, the genito-urinary or the intestinal tracts.

b) Due to circulatory stasis and pressure.

Contrary to the belief of the majority that an affection of the optic nerve due to focal disease is a blood stream or lymphatic invasion of bacteria or other toxins, Coffin[29] claims that the affection of the nerve is brought about mechanically by the disturbed circulation of the parts and that the changes in the nerve might as easily be brought about by an involvement of the sinus most distant from the nerve. He comes to this conclusion by an almost constant pathologic finding of thrombophlebitis of the veins in the mucosa of chronically diseased sinuses. These veins are contiguous to and empty into the ophthalmic veins. As the phlebitic condition advances from the ethmoid veins to the ophthalmic, the return flow of blood from all those parts supplied by the ophthalmic veins will be retarded and an edematous condition of these distal parts will occur.

Chiasmal Tumors

From a study of the effects of sinusitis on chiasmal tumor, Lillie[30] concludes that diseases of the paranasal sinuses may be associated with chiasmal tumors and cause disturbances of vision not typically characteristic of either causative factor. Surgical treatment of diseases of these sinuses will eliminate this factor and for obvious reasons should be instituted before the intracranial operation for chiasmal tumor. The ophthalmologic syndrome of chiasmal tumor is characteristic and constant, whereas the ophthalmologic syndrome due to disease of the paranasal sinuses is not. The rhinologic manifestations of disease of the paranasal sinuses are not always characteristic and the relative importance, so far as visual disturbances are concerned, is difficult to evaluate. At least the visual disturbance in frank disease of the paranasal sinuses is extremely low. This type of patient should be observed over a sufficient period so that a satisfactory diagnosis may be reached. These observations should consist of team work between the ophthalmologist, the neurologist, and the rhinologist.

Manometric spinal readings as an aid in differentiating headaches

Bruenings[31] gives interesting findings in connection with his studies into intracranial pressure and manometric spinal fluid readings. As an adjunct he finds the inducing of a headache following pressure on the jugular veins has diagnostic value. Headaches caused by ear or sinus disease were not increased by jugular compression, in some the headache was lessened by the consequent venous hyperemia. The headache was increased in glaucoma, in leptomeningitis and in brain tumors that caused pain, also in toxic or fever headaches and in alcoholic headaches. Migraine and neurotic headaches, extradural abscess and sinus thrombosis showed no increase in pain on jugular compression.

THE FACE

Fracture of the Facial Bones

Naftzger[32] stresses the importance of proper treatment of fractures of the facial bones, involving the accessory sinuses. Such injuries are on the increase, due to automobile accidents. The results are disfiguring unless these cases are properly taken care of. They are usually accompanied with other serious injuries which so occupy the attention of the surgeon that the facial bone fractures are neglected. Because of his familiarity with the local anatomy, the rhinologist should play a more important part in this work. The sequellae which may follow are: 1st, numbness of the cheek; second, malocclusion of the teeth; 3rd, purulent dacryocystitis; 4th, disturbance of vision due to displacement of the eye-ball or injury to the ocular muscles or optic nerve, which may follow extensive fracture; 5th, chronic sinusitis; 6th, deformities of the eyelids from scar contractions.

He conducted some experiments in which he simulated the various forms of head traumatism on the cadaver. Crushing and striking blows were induced and from different directions and in differing intensities. The heads were then dissected in order to discover where fracture lines and displacements had taken place. These he reports in detail. Crushing injuries of the face usually involve the maxilla, the nasal and the malar bones. The antrum and ethmoids are frequently involved and sometimes the frontal. If the blow reaches the perpendicular plate of the ethmoid, the cribiform plate is likely to be fractured. Displacements of fragments are in the direction of the blow.

The antrum frequently fills with blood and is then likely to become infected. Free drainage through the inferior meatus should be established in such a case. The presence of a blood clot can be demonstrated in the X-ray film unless there is too much swelling. The X-ray does

not always show the lines of fracture; bony contours must be carefully palpated. In case of depressions, a free exposure is indicated, sufficient to remove the smaller loose fragments and to replace in position with hooks and elevators, the larger pieces. The normal bony anatomy should be carefully reëstablished in so far as is possible. Wiring is rarely necessary as the bony parts tend to stay in their normal position. The rich blood supply of these parts fosters the speedy healing which usually results.

Roberts[33] discusses the symptoms of fracture of the malar zygomatic arch. He states that the external swelling around the orbit usually obscures the signs of bone depression. When the malar is involved extending into the orbit the depression can be felt, even in the presence of the swelling, by starting at the inner canthus and running the finger along the lower orbital margin. A distinct break and depression will be noticed extending, as a rule, to the external canthus. When the involvement is more in the zygoma, the depression is more marked the nearer one approaches the external auditory meatus. The movement of the jaws is difficult because of injury to the masseter muscle lying directly underneath. Roberts presents a new instrument on the principle of a cork screw by which the depressed bone is pulled out into place.

THROAT AND MOUTH

Agranulocytic Angina

The attention of laryngologists has been attracted by descriptions and case reports of agranulocytic angina. Potts[34] finds 73 cases reported in the literature. The disease is characterized by sudden onset of an acute infection of the mouth and throat, low white count with marked reduction or absence of the granular cells, high fever often with chills, great prostration and rapidly fatal course, death occurring in three or four days. The white blood cells range from 5,300 to 400, consisting of lymphocytes, monocytes and occasionally, polymorphonuclear cells. The red blood cell as well as the hemoglobin is usually normal. The throat infection progresses rapidly and assumes a gangrenous nature. The tonsils are always involved and in most cases, the tongue and the gums. In one case, it extended to the larynx. A number showed vaginal ulcerations as well, as there is a tendency to attack mucous membrane surfaces. In no case was there noted any lymph gland hypertrophy. Cultures are not significant. It is more prevalent in women, of middle age. There is always a previous debilitating disease, which is significant. The end picture is usually a broncho-pneumonia. As yet, no particular form of treatment has proved of any avail. The condition must be differentiated from pernicious anemia; aleucemic leucemia; sepsis; kala azar noma. Thompson[35], Uren[36], Hueper and O'Connor[37], likewise discuss the subject and report cases.

Leeches in the upper air passages

Salzberger[38] reviews the literature and reports 4 cases of leeches in the upper air passages, 2 were in the recessus pyriformis, one in the uvula, and one beneath the vocal cords. He writes that leeches reach the upper air passages generally with drinking water or inspiration while bathing.

Ludwig's Angina

In a clasical treatise on Angina Ludowici, Blassingame[39] considers this relatively unusual and serious infection in the floor of the mouth. Some have thought the infection had an extra-oral source, but his animal experiments showed that lymphatic drainage from the floor of the mouth, the inner side of the lower teeth and gums, excepting at the extreme front, is into the sublingual pouch, where an inflammation will finally develop into a sublingual phlegmon or a Ludwig's Angina. He points out this relationship in detailed anatomical illustrations. Treatment is prompt and free operative drainage, preferably by the external route. The incision goes up through the muscular floor of the mouth, into the sublingual space.

TONSILS AND ADENOIDS

Tonsilloscopy

In Jackson and Coates' new and admirable text book on The Nose, Throat and Ear and Their Diseases, French[40] writes an interesting chapter on tonsilloscopy. With this specially designed lamp, he transilluminates the tonsil and its lymphoid extensions. With practice one can differentiate healthy and diseased tissue. On page 252 he gives a diagrammatic illustration, showing the arbitrary divisions of what he calls the infratonsillar lymphoid tissue, this being the tissue which extends down from the tonsil and over onto the tongue. He differentiates a pharyngeal branch, a lingual branch and a lingual apron, in addition to the standard faucial and lingual tonsils. He shows how this infratonsillar tissue can harbor cryptic disease which may continue to trouble after the removal of the faucial tonsils, and he advocates the removal of this pharyngeal branch as a routine part of the tonsil operation. He has also developed a sort of curette or scraper with which to clean the crypts of the lingual tonsil and its branch and apron. He points out the limitations of the tonsillectome or snare in removing en masse the faucial tonsil with its pharyngeal branch, and he advocates that the whole process be done by dull dissection without the use of a snare. The procedure permits the removal of the lower part of the tonsil from its capsular bed and reduces the amount of hemorrhage. (This becomes an interesting barking-

back to the earliest operators who used finger dissection so successfully. Later, the use of sharper instruments was attended with more bleeding and the operation fell into comparative ill repute. It was revived with the invention of the tonsillotome which partly removed the tonsil; and with the perfection of surgical technic we have worked back to its complete enucleation, in which French takes this advanced stand.)

London Paste for removal of the tonsil

An interesting chapter in Irwin Moore's new text book[41] on The Tonsils and Adenoids advocates the removal of the tonsil by operative procedure, where possible, but offers the use of London Paste as a proven substitute when operative removal is contraindicated or refused. Equal parts of caustic soda and unslaked lime are worked into a fairly thick paste with alcohol. The consistency is important: if too thin it spreads to other tissues, if too thick it does not stick well. He applies it to the tonsil with a cup-shaped instrument. It is a powerful caustic and must be used with care. The escharotic effect is rapid and requires but a few seconds. The paste should be reapplied six to twelve times, at intervals of about four days. An initial application of cocaine makes it painless. Its action is unique in that it has a "proclivity for destroying only the tissues of the tonsil" and does not injure "the muscular structure of the faucial pillars and soft palate". Scar tissue does not result as is the case when using the galvano-cautery. The author has used it many hundreds of times, notably with professional singers who feared a complete tonsillectomy.

THE THYMUS

The thymus in Tonsil and Adenoid surgery

The loss of an eleven month old patient that came because of choking spells, was correctly diagnosed enlarged thymus and died the day after radiation, operative work being contraindicated, is Carroll Smith's[42] basis for the presentation of this case and for his interesting review of the literature. Perkins of New York secured an initial X-ray film of a four year old case where enlarged thymus was suspected. The X-ray was reported negative; adenotonsillectomy was attempted; the child died under the anesthesia. Autopsy showed an enlarged thymus whose edges so closely corresponded with the position of the heart that the two shadows had coincided in the film. A thymus may enlarge twenty-four hours after radiation. Torrey of the University of Pennsylvania claims a thymus may enlarge during the act of crying. Mosher claims crying has no effect and notes the similarity between a thymic death and one caused by acidosis. In a series of 5000 X-ray examinations of children between two and sixteen, or of tonsil and adenoid age, seven per cent. showed an enlarged thymus. X-ray therapy failed to reduce this enlargement in one per cent., and this group later showed other mediastinal pathology. In the remainder, four X-ray treatments of one third of an erythema dose, at ten day intervals reduced the thymic enlargement and permitted the successful removal of the tonsils and adenoids. In a series of 1,074 autopsies by Edith Boyd of Minneapolis, on children who were killed by accidents and thus were considered normal, the thymuses in the healthy children were larger than was the case in the poorly nourished children. The weight curve of the thymus in differing ages corresponded with the weight of the other lymphatics.

Sarcoma of the thymus

Jones[43] reports a child of three years that was brought in for a tonsil and adenoid operation. The coarse breath sounds, anterior lung dullness and chest X-ray revealed the presence of an enlarged thymus. Radiation helped temporarily. Sudden death came nine weeks after the onset of the trouble. A lympho-sarcoma of the thymus was discovered at autopsy. He was able to find fifty-one such cases in the literature, in only four of which was the age under ten years.

THE LARYNX—PARALYSIS

Relieving dyspnea

MacKenty[44] proposes a small permanent opening into the trachea just above the point where the trachea dips backward into the chest, for relief of a bilateral laryngeal paralysis. His operation sutures the tracheal mucosa to the skin edges of the tracheotomy opening.

Not caused by thyroid hypertrophy

Mullin[45] from a study of the nerve supply of the larynx believes that enlargement of the thyroid gland is not a cause of laryngeal paralysis. He finds that malignancy of the thyroid gland does cause a paralysis and believes that in a non-malignant thyroid with a paralysis of the recurrent laryngeal nerve, it is due to an enlargement of the mediastinal glands, rather than to an enlarged thyroid.

THE LARYNX—TUMORS

Blastomycosis

New[46] reports two cases of blastomycosis of the larynx. It is a rare condition as but three others have been reported. All five cases showed a grayish nodular infiltrating lesion of the vocal cord, looking as if the mucous membrane had been touched with silver nitrate. There was a negative history for syphilis, a negative Wassermann, a negative X-ray picture of the chest, a negative sputum. There is likely to be a loss in weight. A microscopic examination is necessary to determine the diagnosis: the slide pic-

ture resembles tuberculosis. Treatment consists of local X-ray therapy, with potassium iodide taken internally in increasing doses, starting at ten grains three times daily and working up to as high as two hundred grains at a time.

Diagnosis of tumors

Imperatori's[47] paper on the diagnosis of laryngeal growths brought out an interesting discussion. He emphasized the loss of cord motility as diagnostic of cancer; and urged a biopsy in every case. Beck of Chicago also urged a biopsy on every suspected case. Lynch of New Orleans believes in an initial biopsy but makes all necessary initial arrangements to go right ahead with its eradication in case a positive report is made. He uses direct laryngoscopy, a magnifying lens, palpation, transillumination, and a small reflecting mirror down in the glottis, all to determine accurately the extent and nature of the lesion. Myerson of New York does not think that the removal of a specimen activates the lesion. MacKenty of New York says that syphilis of the larynx is extremely rare, but that he and Beck each had a case showing syphilis and tuberculosis and cancer. A negative Wassermann does not exclude syphilis. He prefers keeping a case under observation for some time and urges the drawing of a picture at each observation. Only so can detailed changes be recorded.

Dwyer of New York reminds us that even an expert pathologist will not always commit himself as to whether a section shows malignancy or not, and reliance has to be placed on the clinical picture. St. Clair Thomson of London was asked his opinion. He said that 50% of his operations for cancer of the larynx had been done without biopsy; that the inability always to get a good specimen made a biopsy in this region at times unreliable. He points out that malignant forms are almost always on the anterior two thirds, never limited to the posterior third. Paresis is a late, not an early symptom. His summary is interesting, not only as representing an English viewpoint but as coming from one of the leaders in this work. "In a middle-aged man, whose case has been watched for some time, and in whom the symptoms do not yield to treatment, the cord should be cut out. In watching the case we consider the situation of the tumor, the age of the patient and his response to treatment. We must treat his teeth, cut out tobacco and alcohol, put him on a régime of absolute silence for three weeks to give the circumambient laryngitis a chance to subside. Then we must prove the exclusion of every other condition, particularly excluding the possibility of tuberculosis without confirmatory signs elsewhere in the body, and in the end we have to trust to the skilled eye and the passage of time."

Tuberculosis of the larynx

Spencer[48] writes of the symptomatology and diagnosis of laryngeal tuberculosis and emphasizes the importance of an early diagnosis of pulmonary tuberculosis so that the proper treatment can be instituted early. Rest of the larynx, the solar laryngoscope and the cautery are advised.

Window resection of the larynx

Graham[49] reports a case where he did a window resection of the thyroid cartilage and removed a cancer of the vocal cord through the opening. It later proved that this window afforded an avenue for an extension of the growth and it thus became extrinsic. Only a prompt total laryngectomy saved the patient. He thus concludes that if the process is so far advanced as not to permit its eradication by the peroral route, it is also too far advanced for the window resection method.

Laryngo-fissure

Over against this window resection method, St. Clair Thomson[50] advocates a more extensive operation for removing intrinsic cancer of the larynx which he calls laryngo-fissure for lack of a better name but which resects so wide a window in the thyroid ala as to be almost a hemi-laryngectomy. He however leaves enough of the structure to keep the skeleton intact. This holds the perichondrium in place and permits a later stiffening of this region which makes it almost as firm as it was before the operation. This large window gives easy and quick access to the tumor, makes it easier to eradicate it with a safe margin of healthy tissue all around the cancer, permits better control of any bleeding, and affords a smoother and healthier surface for healing than the exposed cartilage would give if it had not been removed. He usually removes part of the arytenoid at the same time, leaving enough to hold the arytenoid muscles and facilitate closure of the glottis in swallowing. He thinks he gets a roomier resulting glottis and a better voice than obtains after a standard laryngo-fissure operation. If the diagnosis has been made early enough, the operation is free from danger and yields good results. He speaks with a background of seventy operations so performed in which 76% gave lasting cures.

He does the operation under novocaine with a little chloroform during those stages where pain would otherwise be experienced. Analgesia rather than a complete general anesthesia is sought. The patient is sufficiently conscious before leaving the table, to cough. He considers this coughing important, as the most effective means against lung complications. For this reason he uses no morphine or sedative. He further keeps the blood out of the lung by packing above the tracheotomy tube. This tube is left in about nine hours, and then usually removed.

The windows are left open in the patient's room. He has sterile water that evening, food the next day, is out of bed in twenty-four hours, walks in three days, and is usually out on the tenth day. Permission to talk is given after three weeks.

In response to a question as to what type of case he considered fit for this operation, Thomson said that an intrinsic cancer that is local, shows a motile cord, with the anterior and posterior commissures free of the growth, were favorable cases for laryngo-fissure. If the arytenoid is involved, this operation is not suitable. If the anterior commissure or angle is involved, it would be a boundary line case. He advises an initial biopsy; but if the report is negative, then use one's surgical judgment, first watching the case, and not hurrying into an operation. He comments that English patients seem to permit the surgeon more time than they do over here, not hasten him into an operative effort before there has been opportunity for careful study of the case and a noting of its progress.

In discussion, MacKenty took a little more radical position. He says: "When any more than a third of a cord is involved, and that must be the middle third, we feel that it is a rather risky thing to do anything but a total removal."

Laryngectomy—A two stage operation

For malignancy of the larynx the two stage operation as devised by New[51] seems to combine the advantages of the old two stage operation of Crile and the one stage operation of MacKenty without the disadvantage of constant postoperative care, drainage tubes and frequent irrigations necessary in the one stage and without the occurrence of tracheal stricture in the old two stage operation. The first stage consists of skeletonizing the larynx, the rings of the trachea and the cricoid, without opening the trachea. This stage is followed by a reaction with a temperature frequently of 101. When the temperature is normal, in perhaps four days, the trachea is anesthesized and a disk of cartilage is removed from the lower margin of the cricoid cartilage to allow the tracheal secretion to infect the wound. Four days after the trachea has been opened, the larynx may be removed without the usual reaction.

THE BRONCHI

Blood in the bronchi after tonsillectomy

Louis Daily and Ray K. Daily[52] report 79 tonsillectomies operated upon under deep anesthesia of which 74 or 94% had blood in the lungs bronchoscopically. Of 21 cases operated on under light anesthesia 4 or 19% had blood in the tracheo-bronchial tree. Of 49 cases under deep anesthesia, 4 or 8.16% had blood oesophagoscopically in the stomach contents. Of 21 cases operated on under light anesthesia 19 or 90% had blood in the stomach contents. They therefore advocate that the operation of tonsillectomy should be done under light anesthesia.

Primary carcinoma

Williamson[53], Taub[54], and Schall[55] write on primary carcinoma of the bronchi and all advocate early bronchoscopy. Schall reports six cases. For symptoms he finds cough, dyspnea, pain, hemoptysis, fever and cachexia appearing in varying degree and combination. Cough was the most constant and became worse. In the X-ray film, tubercular masses are more frequently in the posterior mediastinum while cancerous nodules are likely to appear in the anterior mediastinum. The diagnosis rests on the bronchoscopic picture of a protruding tumor mass or a bronchial stenosis due to an infiltration of the wall. It is a fairly characteristic picture. A biopsy makes the diagnosis positive.

THE ESOPHAGUS

Mosher[56] continues his studies of the esophagus. In 14 specimens studied histologically by McGregor[56] they could not demonstrate an anatomic sphincter at the cardiac end. Physiologically, the lower end of the esophagus or upper end of the stomach, has a weak sphincteric action, which the authors believe may be due to the action of the deep vertical pleats characteristic of this part of the esophagus and by the action of the elastic tissue which they demonstrate as being most abundant in this region. Cannon found that a neutral solution would pass back and forth between the stomach and the esophagus but an acid solution created a sphincter action which held a fluid in the stomach.

In the case of cardiospasm they confirm the findings of Stokes and Hurst that the ganglion cells in Auerbach's plexus are diminished, especially at the terminal portion. In studying the lower end of the esophagus a Sippey rubber dilator, painted with stripes of barium and rubber cement, enabled the operator to dilate the lower end of the esophagus while observing the procedure through the fluoroscope.

Foreign bodies in the stomach and intestines

Myerson[57] reports 39 cases of foreign bodies in the stomach and intestines, 32 of which were under 10 years of age and only one was over 20 years. 36 of the 39 foreign bodies were passed in the stool without incident and 82% of these foreign bodies were pointed. He feels that all patients who have swallowed sharp foreign bodies or foreign bodies that are slow in passing, should be kept under observation until they have been passed or removed. But unless it is indicated, an operation should not be done. The hazard of a gastrotomy in a young child is greater than that of waiting. Definite indications for gastrotomy are 1, where there are signs of a perforation; 2, where the foreign

body is so large that it does not pass the pylorus within a reasonable length of time.

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Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 15511

DULL PAIN AND SORENESS IN THE EPIGASTRIUM

MEDICAL AND SURGICAL DEPARTMENTS

First admission. An American factory foreman forty-seven years old entered the hospital September 12 complaining of dull pain and soreness in the midepigastrium.

The pain started suddenly, sharply localized and severe. It gradually subsided and in three days disappeared spontaneously. Food did not relieve it. For four months he was free from symptoms. Then he had another attack of gradual onset lasting four days. Since that time he had had attacks almost every day. The pain was always dull. Heavy exercise brought it on. The epigastrium was sore to touch. Recently the attacks had lasted longer, but the pain had been growing less and less severe until at present there was only a soreness. It had no association with meals. Occasionally it woke him. Food occasionally relieved the soreness. Soda always gave temporary relief. Recently he had belched gas several times with relief. Records of the Consultation Clinic show a visit August 28, two weeks before admission. The hemoglobin was 80. The urine was slightly cloudy, with shreds. The urinary sediment showed 40 to 50 leukocytes per high power field, rare red cells. Blood Wassermann was negative. Examination by a urologist showed the right epididymis thickened, especially at the lower pole. There was no discharge. Urine taken by catheter was clear. The prostate was only slightly enlarged, but seemed boggy and moderately tender. The vesicles were not felt. The prostatic secretion was loaded with pus, scattered and in clumps. Sterile bladder urine showed many leukocytes and occasional red cells. X-ray examination showed the kidney outlines not visible on either side. There were no shadows suggesting stones. There was some rotation and scoliosis of the lumbar spine. Examination with a barium meal showed the stomach of the orthotonic type, in the usual position. Peristalsis was sluggish. There was a constant irregular filling defect involving the pyloric end of the stomach over which peristalsis did not pass. There was some tenderness directly over this area. There was retention of about half the motor meal at six hours. The first portion of the duodenum appeared normal, but was somewhat dilated. The six hour meal had reached the splenic flexure.

The patient's family history is not significant.

He had the diseases of childhood, including scarlet fever and diphtheria. At eighteen he had gonorrhea. He still often felt pain "running through the penis". For ten or fifteen years he had had nose-bleeds beginning and stopping spontaneously. Seven years before admission he had influenza. For a number of years he had been eating irregularly because of varying factory shifts. Until fifteen years ago he was subject to fainting. Two years before admission he weighed 212 pounds, his best weight. His present weight was 169. He attributed the loss to the diet of crackers and milk he had been taking since the previous June. In the past week he had gained eight pounds.

Clinical examination showed a well nourished, healthy looking man with nothing abnormal in the head, throat, heart or lungs. Abdomen negative except for tenderness on deep palpation in the epigastrium in the costal angle. There was a slight impulse felt in the right inguinal ring. The right epididymis was thickened and nodular along the entire length. The right cord was slightly thickened, not tender. The prostate was not enlarged but felt boggy. The left lobe was somewhat larger than the right, not very tender.

Before operation amount of urine not recorded, specific gravity 1.010, the slightest possible trace of albumin, 2 to 4 leukocytes and 1 to 2 red cells per high power field at the single examination. Blood not recorded.

Before operation chart normal.

September 14 operation was done. The patient made a remarkably good convalescence. September 28 he was discharged relieved.

History of interval. Six months after his discharge he came to the Out-Patient Department complaining of dizziness. Examination, including blood pressure, was normal except for obesity. A year later he had gained 30 pounds, ate anything, and was working. "100 per cent cure." A year and a half after this, seven months before his readmission, he began to have pain again, now a dull gnawing epigastric ache, most severe in the region of the operative scar, worst from three to four a. m., slightly aggravated by eating. Examination in the Out-Patient Department was again negative. X-ray showed practically the same findings as those of the examination three years before. On a bland diet he had no pain for over a month, but lost weight and strength and began to regurgitate sour material with occasional lumps of food at night. He became somewhat dyspneic. From this time he had some pain in the back of his neck running down into the left shoulder, sometimes aggravated by moving his arm. He went steadily downhill from this time. He had per-

sistent constipation. After physic his stools were dark; not black. Four months before readmission the pain recurred, mid-epigastric, immediately following meals. On two-hourly feedings of milk and cream he was free from it. On returning to the six-meal bland diet he again had a recurrence. He vomited without nausea perhaps six times in the three months just before his second admission. He was referred to the wards, but postponed entering for five weeks because of lack of money, losing weight and strength all the time. A month before readmission he was slightly yellow for several days, and had light yellow stools. Three weeks before readmission a new pain developed, severe and griping, beginning above and to the left of the umbilicus and rolling up to the pit of the stomach, increasing in intensity as it moved. A visible lump moved with it. It came in paroxysms every two or three minutes lasting half a minute to a minute. This pain was brought on by food or by lying flat, aggravated by deep breathing, and relieved by belching gas. The attacks lasted two to five hours and passed off as the lump disappeared. The old gnawing constant ache remained when the acute pain was gone. He was obliged to sit up straight all night, and often had practically no sleep. For three weeks before readmission he had pain and soreness in his calves. In the seven months before readmission his weight fell from 196 to 135.

Second admission, May 2, three years and eight months after his discharge. He now said that the pain differed from the pain before his operation in being made slightly worse by food, especially solid food. It was now a gnawing soreness in the epigastrium. It was at its worst at three or four o'clock in the morning, when he often woke up with it and had to walk the floor for relief.

Clinical examination showed a rather thin, pale man in no discomfort. The skin of the groins and axillae showed a slightly scaly pinkish orange eruption. The prostate was rather hard and firm, giving the impression of a brawny edema. The examination was otherwise negative.

Before operation urinary sediment loaded with leukocytes at one of two examinations, specific gravity 1.024 to 1.030. Blood: 12,800 leukocytes, 68 per cent polynuclears, hemoglobin 65 per cent, reds 4,900,000. Smear at entrance showed slight achromia; otherwise it was not remarkable. Hinton negative. Stools: guaiac strongly positive at all of three examinations. Fasting contents of the stomach: 15 cubic centimeters of dark gray slimy material with a stale odor, no free hydrochloric acid, total acid 46 cubic centimeters, guaiac strongly positive. Test meal after half an hour: 8 cubic centimeters of similar material, no free acid, total acidity 15 cubic centimeters, guaiac as before. Test meal after an hour identical except for total acidity 34 cubic centimeters.

X-ray examination showed a total six hour retention in the stomach. The pyloric end of the stomach was constantly deformed by an annular constricting lesion as before described. The ulcer crater previously described could not be seen. Peristalsis was absent and the stomach was dilated. No barium left the stomach during the examination. The first portion of the duodenum could not be visualized. The previous findings were confirmed.

Before operation chart not remarkable.

A surgical consultant considered the diagnosis doubtful. May 9 he operated. May 11 the patient vomited a little. A stomach tube showed almost 2,000 cubic centimeters of dark brown residue which was left for later removal. May 12 the temperature, pulse and respirations all rose, reaching 105.2°, 125, and 37 May 13. That day the patient died.

Discussion

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

Pain having no association with meals is a very important fact. The commonest cause of pain associated with meals is peptic ulcer. Practically every case of peptic ulcer has pain associated with meals.—As food relieved this pain, it did have some relation to meals, in spite of the previous statement. The relief with soda and the belching of gas both favor the same guess.

Dr. George W. Holmes: There is nothing unusual in the position of the stomach. Sluggish peristalsis is sometimes present in cancer and is of some value in differentiating cancer and ulcer. In ulcer, peristalsis is apt to be active, while in cancer it is sluggish. That taken alone does not mean much, but with other things it is of some value. "There was a constant irregular filling defect involving the pyloric end of the stomach over which peristalsis did not pass." I think you can perhaps see that here. Such a filling defect as that, if constant, and there were several examinations, means some organic lesion in the stomach. You can get a defect like that in spasm, but spasm is not constant, so we probably have an organic lesion here. Failure of peristalsis to pass over the stomach means induration; the stomach wall was indurated and peristalsis was blocked. There was some tenderness directly over the area. That means about as much as tenderness found by palpation. The only advantage is that with X-ray you can sometimes locate the tender spot more accurately.

Dr. Cabot: Is it of any considerable value in diagnosis?

Dr. Holmes: It may be in the pelvis, as in the location of tenderness in relation to the ap-

pendix. The appendix may be seen under the edge of the liver and the tenderness found in the pelvis.

He had retention of about half the motor meal at the end of six hours. That is an important finding. It rather confirms our previous notion that there was true deformity. Retention may occur but is not likely to occur with spasm. A deformity of this sort should give retention. They will want us to answer the question. Is this cancer or ulcer? Retention is more likely to occur in ulcer than in cancer, the size of the lesion being the same. "The first portion of the duodenum appeared normal but was somewhat dilated" means no definite lesion.

DR. CABOT: I have been drawing the conclusion that this is peptic ulcer.

DR. HOLMES: With the evidence we have from the X-ray examination I think we can say without fear of being disputed that this patient has a lesion at the pyloric end of the stomach which is the cause of retention and that it is in the stomach and not in the duodenum. That is really considerable evidence, evidence enough to warrant operation. Is it cancer or ulcer? We can guess, but cannot answer with any degree of certainty. Further evidence in favor of cancer is the angular shape of the lesion. In the plate taken three years after the operation there is still annular deformity, though I must admit it does not show quite as well as the first one. The large amount of retention is in favor of ulcer. Sluggish peristalsis is in favor of cancer. We haven't anything to make a definite statement upon. If he had not lived three years I should probably have said cancer.

DR. CABOT: So I do not see that we have any particular help in that. It does not answer the primary question, "*cancer or ulcer?*" which is our problem. I do not get so far how long these symptoms have been going on. That is a factor of great importance in diagnosing cancer and ulcer. We need to know how long he had been having these symptoms.

DR. HOLMES: One thing I did not mention is syphilis.

DR. CABOT: What are the chances of its being syphilis?

DR. HOLMES: Syphilis can produce such a lesion.

DR. CABOT: I am glad to know that. The only case of gastric syphilis that I saw diagnosed by our Radiologic Department was much more diffuse than this.

NOTES ON THE PHYSICAL EXAMINATION

The clinical examination, like the past history, does not seem to have any bearing on the question we are interested in, though we might discuss the question of tuberculosis versus gonorrhea in that chronic epididymis.

We have now reached the operation and we have to commit ourselves on the diagnosis. You have probably been saying what I have been saying, peptic ulcer. On the grounds of these plates alone I should have been inclined the other way.

PRE-OPERATIVE DIAGNOSIS, FIRST ADMISSION

Pyloric ulcer.

FIRST OPERATION

Gas-ether. Careful palpation of the stomach and duodenum failed to reveal any definite abnormality. There was possibly some slight thickening on the posterior wall of the pylorus, but not sufficient evidence of ulcer to warrant opening the bowel. The gall bladder was markedly distended and could not be emptied. There was a small palpable gland at the junction of the common and cystic ducts. The gall bladder was removed from below upward. The cystic duct was found to be abnormally small. The appendix showed no particular signs of disease, but was removed.

PATHOLOGIC REPORT

An appendix 5 centimeters long. The tip is obliterated.

Fibrous appendicitis.

A gall bladder already opened. It has a smooth mucous surface. There are no stones.

Microscopic examination shows fibrosis and wandering cell infiltration.

Chronic cholecystitis.

FURTHER DISCUSSION

DR. CABOT: Dr. Holmes says he thinks there was abnormality in the stomach nevertheless. I should not have had the courage to say that.

I suppose the operative findings mean what is often wrongly called chronic appendicitis and cholecystitis, neither of which I believe had anything to do with his trouble.

It was a remarkably successful operation we have to admit.

When pain recurs a year and a half after operation he has no gall bladder, so we cannot call it that, he has no appendix, so we cannot call it that.

Have you anything to add now as to this later X-ray examination, Dr. Holmes?

DR. HOLMES: I think not. I might say that I think the surgeon can easily miss a small lesion unless he opens the stomach. Of course a good deal of the lesion we see in the plate is due to spasm. We could feel a lesion of the size the X-ray indicates. But of course a good deal of it may have been due to spasm. I still think he had something in his stomach at the time.

DR. CABOT: I do not know what the pain in the back of his neck was.

The pain beginning at the left and going to the right—that is going toward the pylorus—might perfectly well be peristaltic gastric pain.

It works out perfectly well as peristaltic pain such as would be associated with ulcer. I have several times seen a lump move in ulcer cases with hyperperistalsis.

I do not know the cause of the pain in his calves.

DR. HOLMES: The X-ray picture now could be pyloric obstruction with retention and dilatation. We have no further evidence on which to differentiate cancer and ulcer.

DR. CABOT: The fact that he has lived three years does not rule out cancer, although it makes it less likely. I think it has to be one of those two, ulcer or cancer. Is there anything more to be said about syphilis?

DR. HOLMES: I do not think you can rule it out by X-ray alone.

DR. CABOT: We have no other evidence of syphilis in the physical examination, the history or the blood.

A STUDENT: Could it be both ulcer and syphilis?

DR. CABOT: Yes, it can be both.

Let us take a vote. Would anybody like to vote for no lesion at all in the stomach? (No hands raised.) How many think it is ulcer? (A few hands.) How many think it is cancer? (Nearly the whole class.) Three years' history,—we do not know how much more than three years, certainly three years. Loss of weight goes with either one so long as he has been vomiting so much. The positive guaiacs can go with either one, but the fact that the tests were positive on every occasion seems a little more like cancer than ulcer. In ulcer cases in several examinations we expect to get one negative guaiac. The length of the history of course favors ulcer.

A STUDENT: How about the lack of free hydrochloric acid?

DR. CABOT: It favors cancer. You can also of course get it with ulcer.

A STUDENT: What about the change in the character of the pain?

DR. CABOT: I do not think we know enough about that pain to know whether it should influence us. Of course there can be obstruction with ulcer. I should like to know what Dr. Holmes says about that. Should that change in the character of symptoms influence us toward cancer rather than ulcer?

DR. HOLMES: I would agree with you absolutely. Retention would account for the change in symptoms as well as cancer.

A STUDENT: Do you think his early symptoms might be due to cholecystitis?

DR. CABOT: Cancer developing later? I do not know of anything against that except the first X-ray, which to my mind is much against it. I do not believe cholecystitis can give that picture.

A STUDENT: How about that pain at night?

DR. CABOT: That is very common with ulcer. On the whole the symptomatology is more like ulcer.

A STUDENT: Would the stale odor of the material in the stomach suggest cancer?

DR. CABOT: I should not say that. It merely means retention. When you have retention food ferments. You can have retention in ulcer just as much as in cancer. I am going to bet for ulcer.

PRE-OPERATIVE DIAGNOSIS, SECOND ADMISSION

Pyloric obstruction, possibly ulcer, possibly carcinoma.

SECOND OPERATION

Spinal novocain. A left upper rectus muscle splitting incision. The omentum was densely adherent to the abdominal wall, the stomach and the liver. After partial separation of adhesions a nodular growth could be felt involving the pyloric end of the stomach. There were widely scattered metastatic nodules on the anterior surface of the stomach throughout the omentum and even in the mesentery of the small intestine. About five pints of straw colored ascitic fluid was aspirated. An anterior gastro-enterostomy was considered, but in view of the wide spread of carcinoma and the ascites as well as the mechanical difficulty of performing the operation it was thought unwise to attempt it.

PATHOLOGIC REPORT

Metastatic adenocarcinoma.

FURTHER DISCUSSION

A STUDENT: Dr. Holmes mentioned that we are more likely to get retention in ulcer than in annular carcinoma of the end of the stomach as this man seemed to have.

DR. HOLMES: With cancer the whole pyloric portion of the stomach may be involved without causing retention.

A STUDENT: If this man had ulcer what was the immediate cause of death?

DR. CABOT: He died of some postoperative complication. I do not know why that might not have been just as well connected with ulcer as with cancer, though cancer patients die more easily than ulcer patients. Plenty of things can happen after operation of which the patient can die, though I think I am a little surprised that he died so quickly. Various complications and accidents that I think of after ulcer operation can kill a man, but I should not expect it so soon. It seems to me the fact that he died so soon is in favor of cancer.

A STUDENT: Would the pain of ulcer start so suddenly and be so sharply localized and severe as this was at first, without any previous attacks?

DR. CABOT: Yes. There is no question about that.

A STUDENT: How about the coffee ground residue?

DR. CABOT: That means digested blood of

course, and we associate the presence of digested blood more with cancer than with ulcer. There is no question about that.

A STUDENT: How about the statement that after the second admission pain was brought on by food, and that there was a visible lump?

DR. CABOT: That appears in both ulcer and cancer, but is more like cancer I think. I am beginning to weaken somewhat as a result of several points brought out by the class. I started with quite a strong feeling that it was ulcer. I still feel as if that were a little more reasonable than the other, but I am a good deal more prepared to find that I am wrong.

A STUDENT: Isn't that blood count a little high for cancer?

DR. CABOT: No; many cancer cases have as high a count as that.

A STUDENT: How about the X-ray report at the second examination, "The ulcer crater previously described could not be seen"?

DR. HOLMES: Craters may occur in either cancer or ulcer. Cancer may ulcerate and form a crater. There is little difference in the X-ray appearance of these ulcers. Cancerous ulcers are apt to be wide and shallow with a good deal of induration around them. There is the possibility brought out by the Mayo Clinic a number of years ago that cancer develops on ulcer. He may have had ulcer at first and later cancer developing in it. In our clinic that has not been a common finding. I do not think he had a typical ulcer crater.

DR. CABOT: Is the disappearance of the crater of any value?

DR. HOLMES: If ulcer cases are put upon proper treatment there is no doubt that the craters may disappear. It is also very easy to miss a crater. A crater may be present at one examination and the next time may be filled with mucus so that we are not able to find it. The disappearance of the crater in this case does not prove that it was not there.

A STUDENT: Was there a crater?

DR. HOLMES: The fact that I cannot point it out on these plates does not mean it was not there. The manipulation during fluoroscopy may have pressed the barium up into the irregularity.

DR. CABOT: They might have found out about the ascites during life. We do not find ascites with ulcer. They thought of gastro-enterostomy but did not do it.

INTERPRETATION OF X-RAY, CONSULTATION CLINIC, BEFORE FIRST ADMISSION

The findings are those of a lesion at the pyloric end of the stomach with gastric stasis. This may be ulcer with associated spasm or malignancy.

INTERPRETATION OF X-RAY, SECOND ADMISSION

Extensive obstructing lesion of the lower third of the stomach, consistent with carcinoma or lues.

CLINICAL DIAGNOSIS, POSTOPERATIVE (FROM HOSPITAL RECORD)

Inoperable carcinoma of the stomach.

DR. RICHARD C. CABOT'S DIAGNOSIS

Ulcer or cancer of the pylorus.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Adenocarcinoma of the stomach with metastases.

2. *Secondary or terminal lesion.*

Infarct of the lung.
Arteriolar sclerosis (spleen).

PATHOLOGIC DISCUSSION

BY TRACY B. MALLORY, M.D.

There is practically nothing to add from the autopsy. He had a very extensive cancer of the stomach. I do not know whether Dr. Holmes would be willing to state the size of it from the films or not.

DR. HOLMES: This time the stomach was so dilated that we did not get peristalsis. He may have had a large lesion without evidence of it in these films.

DR. MALLORY: The cancer was nearly 12 centimeters in diameter, involving nearly a third of the stomach. There was extensive cancerous peritonitis with minute lesions all over the peritoneum, unquestionably the cause of the ascites. The only other finding was a small infarct in the lung as if secondary to the operation. There was no terminal pneumonia, no pleuritis, no cause of the relative suddenness of death. I think he died chiefly of cancer. I should like to ask Dr. Holmes what he thinks was there the first time.

DR. HOLMES: Cancer.

A STUDENT: Was the cancer ulcerated in any place in the stomach?

DR. MALLORY: I am quite sure it must have been. I have rarely seen gastric cancer that was not more or less ulcerated. The usual appearance is that of a circular lesion with polypoid but indurated edges and deep or shallow ulceration in the center.

A STUDENT: Did you examine the prostate?

DR. MALLORY: It seemed to us perfectly normal in gross.

DR. CABOT: Did you make any estimate as to the age of that growth?

DR. MALLORY: No; but tumor growth will pick up speed without any question, and I believe this one probably did. It must have been

present for months. It may have been present for years so far as I can say.

A STUDENT: Were there metastases all over?

DR. MALLORY: We did not do the vertebral column. I think it is not impossible that there were metastases there.

DR. HOLMES: Did you find any evidence of previous ulcer?

DR. MALLORY: No, we did not in this case. The cancer was so extensive that if it had developed on a previous ulcer I think it would have obliterated the ulcer. I have seen cancers which anatomically suggested development from ulcer, and others in which the history made this course almost certain, such as a patient with known ulcer of twenty years' duration who finally died of cancer of the stomach. I do not think it is particularly common, certainly not nearly so common as the figures of the Mayo Clinic would seem to indicate.

A STUDENT: If the prostate was normal how do you account for the pus in the urine?

DR. MALLORY: I stand corrected. No prostate in a man of fifty or more is going to be normal. Microscopic examination showed that there was chronic prostatitis. But I did not feel that the abnormality was of any importance in relation to the other findings.

DR. CABOT: You have to stretch your idea of normal.

CASE 11512

LOSS OF WEIGHT WITH SWELLING OF ABDOMEN AND LEGS

SURGICAL DEPARTMENT

An American printer twenty-nine years old entered April 12 for relief of "cramp" in the back of three nights' duration.

He recalled very little that might have warned him of approaching illness until a month before admission. Then he recognized that he was pale, tired and without energy or appetite. He thought that he was also passing urine less frequently than usual, that the urine was scanty and dark colored and that he had a feeling of heaviness in the groins at times. He continued to work for the next week. His fellow workmen told him that his face looked thin. He was sure that he lost weight before his abdomen swelled. Three weeks before admission he stopped work to rest at home. During the following week his abdomen began to swell painlessly so that his friends noticed it in contrast with his pinched face. He lost what little appetite he had. All food tasted very bad. He had gas and heartburn. He remained up and about for another week, but did not leave the house. He lost strength and increased in girth. During the past week the abdominal swelling had increased markedly. With it he had dull umbilical aching present most of the time, worse on turning in bed. The movement of fluid in the side made walking uncomfortable. He lay about most of the week. His urine was very scanty, but he had limited water drinking. During the past three days his legs had swelled from the ankles to the groins. Lying on his back at night had given him a back cramp that had permitted little sleep in the past three nights.

His family history is not significant.

In childhood he had had a prolonged attack of fever called "typhoid malaria." He had always had a tendency to constipation, but had kept his bowels regular daily with laxatives.

Clinical examination showed a moderately well developed and nourished man lying quietly in bed. The sclerae were slightly icteric. The skin showed some very deeply pigmented moles. Back teeth carious. The location of the apex impulse of the heart is not recorded. The left border of dullness was 9.5 centimeters from midsternum, one centimeter outside the midclavicular line. Right border of dullness 3 centimeters to the right. Supracardiac dullness 3. Aortic second sound greater than pulmonic second. Sounds and action normal. No murmurs. Pulses normal. Blood pressure 175/125. Lungs normal. Abdomen tensely distended, with no tympany. Marked fluid wave. Both legs showed about an equal degree of pitting edema, chiefly about the ankles but extending to the groins. The pupils and reflexes were normal.

Urine: amount normal, specific gravity 1.040 to 1.018, no albumin or sugar, bile positive at two of three examinations, sediment showed 12 leukocytes per high power field and was loaded with hyalin casts at one of two examinations. Renal function 20 per cent. Blood: hemoglobin 75 per cent, reds 4,430,000 to 3,980,000. Leukocytes 7,000 to 12,300, 60 to 68 per cent polynuclears. Three smears not remarkable except that the platelets seemed decreased once. Two Hintons and two Wassermanns negative. Two stool examinations negative. April 15 a bromsulphthalein liver function test collected after thirty-five minutes showed a retention of 35 per cent. Van den Bergh biphasic, 2.59 mgm. per 100 cubic centimeters.

X-ray examination showed the stomach empty at six hours. The head of the motor meal was in the hepatic flexure. The stomach appeared high in the pars media. It was thought the displacement might be due to intestinal contents in the colon. No definite lesion could be demonstrated in the stomach or the duodenum.

Before operation temperature 97.8° to 100.2°, pulse 80 to 118, respirations normal.

A medical consultant was unable to make a diagnosis, but thought that if no further positive findings appeared operation should be done. A surgeon and another medical man also advised exploration.

April 13 the abdomen was tapped with the removal of ten quarts of fluid, specific gravity 1.012, 340 red cells, 130 leukocytes, 16 per cent

polynuclears, 58 per cent lymphocytes, 20 per cent mononuclears, 6 per cent unknown. Culture showed no growth. A guinea pig test showed no tubercle bacilli. Hinton test negative. April 19 the paracentesis wound opened spontaneously with drainage of about a quart of fluid. April 20 a second tap gave nine liters of fluid, specific gravity 1.008, 370 cells, 217 red, 153 leukocytes, 21 per cent polynuclears, 59 per cent lymphocytes, 20 per cent mononuclears. Culture contaminated. Nothing could be felt in the abdomen after the removal of the fluid. April 27 seven and a half quarts of canary colored fluid was removed, specific gravity 1.008, 163 red cells, 157 leukocytes, 18 per cent polynuclears, 61 per cent lymphocytes, 21 per cent mononuclears.

April 27 operation was done. The patient made a fairly good recovery from anesthesia. During the night however his blood pressure fell to 90. The following morning he died.

Clinical Discussion

BY RICHARD C. CABOT, M.D

NOTES ON THE HISTORY

We notice at once that this man is a printer and has had "cramps". Some years ago, when lead poisoning was a commoner and therefore more important possibility to think of than it is now, the combination of these two facts would have seemed an important clue, even though we might have to notice that the cramps were in his back and not in his abdomen, as they should be for lead colic. As we go on we notice that he is pale and weak and that there seems to be some trouble with his urine. This too would go well enough with lead poisoning, which has always been supposed to be a cause of nephritis. As we read on in the case, however, we notice that his trouble seems to be focused in a swelling of the abdomen. Apparently he is conscious of the movements of fluid somewhere inside him, presumably in his abdomen. What the relation of these facts may be to the cramps in his back is not so far clear.

His family history and past history seem to be of no importance.

NOTES ON THE PHYSICAL EXAMINATION

We note that there appears to be slight enlargement in the area of cardiac percussion dullness, and this fact, with the obviously increased blood pressure, systolic and diastolic, leads us to suppose that his heart is enlarged, though there seems to be no evidence of any other cardiac lesion. Obviously his abdomen is full of fluid. The edema of his legs may be secondary to the ascites or may be dependent upon the condition of his heart or kidneys.

The urine is essentially normal, so far as any evidence of kidney disease is concerned, though the presence of bile makes us suspect liver disease. One is somewhat surprised to find his blood showing only very slight anemia. The fluid obtained by tapping the abdomen is what one would expect in any transudate such as may accompany cardiac, renal, or hepatic disease. The liver function test points to gross disease of the liver, and this, with the evidence of portal stasis and ascites, strongly inclines one to the diagnosis of cirrhosis.

DIFFERENTIAL DIAGNOSIS

The fact that he was operated on and the remaining course of the case do not add any new evidence. Accordingly we may best consider the diagnosis by going over the common causes of ascites:

1. Cardiac.
2. Renal.
3. Hepatic (cirrhosis . or acute yellow atrophy).
4. Malignant disease.
5. Tuberculous peritonitis.

This certainly cannot be *cardiac dropsy*. If it were there would be more fluid in his chest and legs, and in the examination of the heart itself more evidence of poor cardiac function. Of *renal disease* the urine gives no considerable evidence. Of *malignant* disease the chief evidence that we usually look for is the presence of palpable tumors after the ascites has been removed by tapping. In the absence of such tumors or of any indirect evidence of their presence (such as might come from X-ray of the stomach, guaiac tests of the stools, or metastasis in some other part of the body) malignant disease can, it seems to me, be ruled out. If it were malignant disease in the liver itself we should be likely to feel some inequalities of surface in the liver after tapping, and to find evidence of neoplasm in some other organ, presumably the stomach. Nevertheless there is a form of diffuse neoplasm in the liver following upon or accompanying cirrhosis. This form we can practically never recognize in life. It therefore cannot be ruled out in this case.

Tuberculous peritonitis can be excluded, I think, by the absence of fever and of tenderness in the abdominal wall, by the low gravity of the tap fluid, and the negative guinea pig test.

Other causes of ascites being thus excluded, some form of cirrhosis of the liver seems to me the only conclusion to which we can proceed on the basis of the facts given us.

The operation performed may have been an exploratory laparotomy to exclude malignant disease, or perhaps a Talma's operation for palliation of cirrhosis.

If my diagnosis is correct, it is somewhat curious that the spleen was never felt, or if felt was not recorded. For in cirrhosis of the liver the spleen is practically always enlarged. Otherwise the case seems to be typical.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Cirrhosis of the liver.

DR. RICHARD C. CABOT'S DIAGNOSIS

Cirrhosis of the liver.

ANATOMIC DIAGNOSES

1. *Primary disease.*
Cirrhosis of the liver, toxic type.

2. *Secondary or terminal lesions.*
Gastric hemorrhage.

3. *Historical landmarks.*
Operative wounds, splenectomy, omentopexy.

PATHOLOGIC DISCUSSION

BY TRACY B. MALLORY, M.D

The post-mortem examination showed an atrophic cirrhosis of the liver, which weighed only 1,120 grams. The surface was roughened, coarsely granular and the consistency markedly increased. At the operation the spleen had been removed and an omentopexy performed, so that the omentum was sutured in numerous places to the anterior abdominal wall. About 400 cubic centimeters of ascitic fluid which was deeply blood stained was found. There was also thick, bloody fluid in the stomach and small intestines in considerable amount.

Small erosions were found in the mucosa of the esophagus, but no definite varices. The source of the gastric hemorrhage could not be definitely ascertained.

The heart was small, weighing only 270 grams. The other organs were essentially negative.

Microscopic examination showed the typical appearance of a toxic cirrhosis with no fat infiltration or hyalin degeneration such as we would expect in an alcoholic cirrhosis.

CAN MATERNAL AND INFANT MORTALITY BE REDUCED?

Valuable indication that fewer mothers and infants die among those reached by public health medical and nursing services is contained in certain figures just compiled for the child health demonstrations of the Commonwealth Fund and released for our use through their courtesy.

During the four-year period covered by this special study there were 10,444 births in the four demonstration communities. In 2,518 cases, about one-fourth of the total, nurses of the health department gave prenatal instruction and supervision in co-öperation with the family physician. In the group under such supervisory care there were only eight maternal deaths in comparison with 60 in the group not served, 65 stillbirths in comparison with 383 in the group not served, and 40 infant deaths under one month in comparison with 297 in the group not served.

The comparative mortality and stillbirth rates are as follows:

	Maternal Deaths per 1,000 Births		Stillbirths per 1,000 Births		Infant Deaths Under One Month per 1,000 Live Births	
	Under care	Not under care	Under care	Not under care	Under care	Not under care
All Demonstrations	3.2	7.6	25.8	48.4	16.3	39.4
Fargo, N. D.	3.9	5.4	17.0	44.2	9.3	49.4
Marion County, Ore.	0.0	3.8	6.2	37.5	16.7	31.4
Clarke County, Ga. Total	6.5	15.2	30.4	70.1	33.6	46.2
White	4.8	6.3	9.7	44.0	29.3	31.7
Colored	7.9	28.6	47.6	109.6	37.5	69.7
Rutherford County, Tenn. Total	2.5	8.3	43.1	49.3	12.9	39.2
White	1.8	7.3	38.9	46.7	9.2	34.4
Colored	4.0	11.5	52.6	57.4	21.4	54.8

In these four communities 6,234 infants between one month and one year of age had either field nursing service or medical supervision in health centers, or both, while 3,425 infants did not have such care. There were 113 deaths in the group served and 163 in the group not served. The comparative mortality rates in this age-group (calculated in relation to the number of infants still alive at one month of age) were as follows:

	Under care	Not under care
All Demonstrations	18.1	47.6
Fargo, N. D.	16.5	80.7
Marion County, Ore.	4.3	25.9
Clarke County, Ga. Total	19.5	71.8
White	7.6	49.1
Colored	34.4	114.5
Rutherford County, Tenn. Total	31.5	57.8
White	28.9	48.6
Colored	39.4	83.7

Where care was given the infant mortality rates were especially low for congenital causes, respiratory diseases, and diarrhea and enteritis. Among infants under one month of age the mortality rate from congenital causes, was 11.5 for the group served and 31.0 for the group not served. Among the older infants the rates for the group served were 5.0 for respiratory diseases and 3.8 for diarrhea and enteritis, as compared with 14.3 and 13.4, respectively, for the group not served.

These figures are supporting evidence that a favorable showing can be secured in the form of low mortality rates where preventive maternity and child health services are organized.

W. F. WALKER, D.P.H., *Field Director.*
—*Health Officer News Letter*, A. P. H. A.

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Peace on Earth, Good Will to Men!

As the seasons recur each important event in human history is signalized by special observance and finds reaction in the minds of people proportionate with the belief in its significance.

The story of the humble birth with the subsequent history of the Messiah of Prophecy has been the most inspiring influence in shaping the spiritual development of the human mind.

We are now responding to the spirit pervading Christendom in expressions of affection for our associates and in remembrance of the unfortunates.

The JOURNAL extends to its readers the heartiest Christmas Greetings and the earnest wish that all may participate in scientific progress throughout the coming year.

"DEATH AT BIRTH"

IN a recent issue of a lay periodical magazine, there appeared an article entitled "Death at Birth"[1]. It sets forth the lamentable situation of the United States in having the highest maternal mortality at childbirth of all the countries that compile statistics on this subject. The article deserves a wide reading, for it is a serious contribution to a timely discussion, and its recommendations, though radical, are reasonable. Editorial comment states that "the author's recommendations were prepared after consulting a number of prominent obstetricians". It might have been helpful if the whole article had been submitted for critical consideration.

"Amid the hurly-burly of statistics and denunciations, two factors stick out too far to be ignored or argued down. First there is the kind of training given to physicians. . . . The second conspicuous fact is really the physical one of distance. . . . In the latter, we have probably, a survival of pioneer conditions; one more proof that America has not yet grown up to her size." From this we turn to statistics quoted as to urban and rural communities. "In 1926 the general rate was 6.5 per thousand, but the rural rate was 5.7, while the urban rate was 7.4". The "second conspicuous fact" seems to point to "pioneer conditions" in our urban communities, instead of the direction which the author indicates.

It is unfortunate that the statistical figures are not on a single basis. They vary from hundreds, to thousands, to ten thousands. A maternal mortality of sixty-five per ten thousand live births is the figure for the United States. Scotland has 6.2 per thousand, which is 62 per ten thousand as compared with 25.5 for the Scandinavian countries. One wonders about pioneer conditions in contrasting Scotland and the Scandinavian countries. Later, maternal mortality following Cesarian section is stated as per hundred.

It is also unfortunate that the Massachusetts Board of Health classification of Cesarian section as a cause of death, is quoted. This classification is as illuminating as classifying amputation of the toe for gangrene as a cause of death, when the surgeon ought to have amputated through the thigh. Death following Cesarian section is usually due to sepsis (although sometimes not so reported), and not to the operation itself.

There has been much loose thinking about maternal mortality; and if the medical profession is guilty, how could the lay author of this article hope to escape? DeLee is quoted as saying "Pregnancy today is not a physiological function". This is neither true nor untrue. It is simply ambiguous and irrelevant. Pregnancy today is perfectly physiological for some women; for others it is not so. DeLee is again quoted: "The repulsion of craniotomy on the dying child—indeed, *mirabile dictu,* on the dead child—is such that the most brutal operations are done, even cesarean section is performed, to avoid mutilating a bit of lifeless clay". This is just slovenly writing. DeLee knows and the

author ought to know that this acme of brutality "even cesarean section", is no more (and no less) brutal than extracting a splinter, or opening an abscess, amputating an arm or cutting out an eye, disagreeable as the contemplation of the operation might be to the lay person. Brutality is in the manner of operating.

But the author quotes also Rubin of New York. "In the last analysis the public must depend on the training and the skill, idealism and conscience of those to whom the safety of expectant mothers is entrusted; above all to that rare quality of judgment, which is born of ripe experience and rigid self-criticism. Too much conservatism on the part of the patient, of her family or friends, who would stay the hand of the qualified obstetrician, when in his judgment, an obstetric operation is imperative, can result in the loss of a patient or reduce her chances to recovery and health". This sounds like "Put your eggs in one basket", and the second injunction "watch that basket", the author sets forth in the closing paragraph of the article. "The difficulty is not, after all, impassable. Regarding rural medical care, that is a question too large to cover in the article. For the rest, a number of voices in the profession have been lifted in what sounds, to the layman, like a notably sensible suggestion. They would train the practitioner adequately in handling normal deliveries, and even in performing the simpler obstetric operations,—with due regard for prophylaxis. They would also train him to recognize complications in time, and these would be referred as a matter of course to expert consultants, just as is done in other branches of medicine and surgery. Why not?"

This is a radical procedure. It will be difficult to carry out because of tradition, inertia, complacency, self-satisfaction. But it begins at the beginning, insisting on adequate preparation of the physician for his work, and puts the chief responsibility where it belongs, on the physician in practice. The obvious difficulty is the lack of cases in attendance at which the student can get experience. It can be overcome by organization and co-öperation and utilization of existing resources not now available.

Medical education alone, however, will not solve the problem. There are too many other important factors involved, social and economic. But the recommendation puts the emphasis at the right point and is intelligent and sane. The author is to be congratulated on having reached such a wise conclusion after the review of a situation which is harrowing to the emotions, especially humiliating to our pride.

REFERENCE

1 H. H. Smith: Death at Birth. Outlook & Independent. Vol. 153. No. 11. November 13, 1929.

PSYCHIATRY AND PENOLOGY

THE examination of all persons committing major offences by a psychiatrist, as an aid in fixing the responsibility of a criminal, has become a matter of routine in the best courts of our land. The judge seeks the advice of the psychiatrist in order to help him form his own opinion. This is the proper method of procedure; it has been developed over a period of years during which we have seen the pendulum swing all the way from the extreme point of view held by some that the psychiatrist had no place in the court to the opposite position in which the psychiatrist actually ran the court, exactly as he would conduct a psychopathic hospital. The final path chosen, of course, was along neither of these extremes but a course part way between them.

It took many years, moreover, for both the courts and the doctors specializing in mental disease to realize that it was possible for the psychiatrist to make a definite diagnosis in but few of his cases and if, as Dr. Stearns points out in his paper appearing in this issue of the NEW ENGLAND JOURNAL OF MEDICINE,* the court would not allow any "stopping place between zero and one hundred per cent", impossibility of diagnosis was often the result. Psychiatry, as is true of all medicine, is far from an exact science. Dr. Stearns also points out that the court is right in using its own standards of guilt, but that the court is also correct in accepting the psychiatrist's diagnosis and treatment of the socially irresponsible individual with mental disease.

All this leads to co-öperation between the court and the psychiatrist and prevents the psychiatrist from monopolizing the field. Many wise persons, moreover, other than those trained especially in mental disease, are fully equipped to assist in the diagnosis and form judgments in these matters. Dr. Stearns believes that "wise prison officials, clergymen, lawyers, school teachers, judges, probation officers, social workers and executives", all may have the necessary wisdom and experience to aid greatly in this complicated problem. The psychiatrists should not, in his opinion, claim the field as exclusively their own. The same principles apply to prisoners under detention as well as those appearing before a court. Psychiatry has a definite place in penology but not the only place. Aid should be given as a part of that provided by a group of people closely associated with prisoners. Each prison ought to have a personnel director who, with the chaplain and the psychiatrist, should form a committee under the eye of the warden with powers to suggest ways and means of salvaging a larger percentage of humans with criminal tendencies than is now being done.

Dr. Stearns' paper, which was presented at the 59th American Prison Congress at Toronto, this year, should be read by all. It is full of extremely suggestive ideas based on sound reasoning and a wide experience. Massachusetts is indeed fortunate in having such a broadminded psychiatrist as the head of its prison system.

*Page 1238.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

BUMPUS, HERMON C. JR. Ph.B., M.S., M.D. Harvard 1915. F.A.C.S. Associate in the Section on Urology, The Mayo Clinic. Associated Professor of Urology, The Mayo Foundation, Graduate School, University of Minnesota. His subject is: "Medical and Dental Aspects of Focal Infection." Page 1229. Address: Mayo Clinic, Rochester, Minn.

LUND, FRED B. A.B., A.M., M.D. Harvard 1892. F.A.C.S. Surgeon-in-Chief, Carney Hospital. His subject is: "The Surgeon and His Environment—Historical Sketch." Page 1233. Address: 319 Longwood Avenue, Boston.

STEARNS, ALBERT WARREN. M.D. Tufts 1910. Dean, Tufts College Medical School. Commissioner of Correction for Massachusetts. Physician in Charge, Nervous and Mental Diseases, Boston Dispensary. Page 1238. Address: State House, Boston.

GREENOUGH, ROBERT B. A.B., M.D. Harvard 1896. F.A.C.S. Visiting Surgeon, Massachusetts General Hospital. Consulting Surgeon, Collis P. Huntington Memorial Hospital. Assistant Professor of Surgery, Harvard Medical School. Address: 8 Marlborough Street, Boston. Associated with him is:

DALAND, E. M. A.B., M.D. Harvard 1918. F.A.C.S. Chief of Staff, Pondville Hospital. Surgeon, Collis P. Huntington Memorial Hospital. Outpatient Surgeon, Massachusetts General Hospital. Surgeon to Tumor Clinic, Beth Israel Hospital. Address: 483 Beacon Street, Boston. Their subject is: "Cancer of the Breast." Page 1240.

SIMMONS, CHANNING C. M.D. Harvard 1899. F.A.C.S. Visiting Surgeon, Massachusetts General Hospital. Acting Surgeon-in-Chief, Collis P. Huntington Memorial Hospital. His subject is: "Bone Sarcoma." Page 1242. Address: 205 Beacon Street, Boston.

BERRY, GORDON. M.D. University of Michigan Medical School, 1906. Address: 36 Pleasant Street, Worcester. Associated with him is:

SCHALL, LEROY A. M.D. Jefferson Medical College 1917. F.A.C.S. Instructor in Laryngology, Harvard. Associate Surgeon, Massachusetts Eye and Ear Infirmary and Massachusetts General Hospital. Assistant Otolaryngologist, Robert B. Brigham and Newton Hospitals. Visiting Otolaryngologist, New England Peabody Home for Crippled Children. Consultant in Otolaryngology, U. S. Marine Hospital No. 2. Address: 270 Commonwealth Avenue, Boston. They write on: "Progress in Larvngology." Page 1244.

AN ADDENDUM TO THE RECORD OF LAST WEEK'S ISSUE

THE JOURNAL wishes to supplement the record of the readers of the papers before the Section of Radiology and Physiotherapy of the Massachusetts Medical Society by the insertion of the record of Dr. Charles P. Hutchins of the Aetna Life Insurance Company, Syracuse, New York, who gave a very interesting paper on "Industrial Physiotherapy."* Dr. Hutchins received the degree of M.D. from Long Island College Hospital in the year 1897. He was formerly Professor of Physical Education, Dickinson College, University of Wisconsin and Indiana University; Director of Rehabilitation Clinic, Aetna Life Insurance Company. He is now Medical Advisor, Aetna Life Insurance Company. Address: Aetna Life Insurance Company, Syracuse, New York.

*Page 1190, issue of Dec. 12.

MISCELLANY

ITEMS OF INTEREST RELATING TO TUBERCULOSIS

Seventy-three million Christmas Seals have been distributed in Massachusetts by the State Tuberculosis League and its Affiliated Organizations. The sale continues until Christmas.

The twenty-eight Affiliated Organizations of the League carry on a varied program of work including the employment of nurses, the organization of clinics, the follow-up of children found to have childhood tuberculosis by the State Department of Health Ten-Year Program, summer health camps for two to three months and programs of health education.

Eighty-five per cent. of the funds raised from the sale of Seals remains in the County where it is raised, ten per cent. goes to the State League and five per cent. goes to the National Tuberculosis Association.

One of the important activities of the National Association is its research work. For the last seven years a group of leading scientists drawn from many departments of knowledge, and affiliated with various institutions of learning throughout the country, have been engaged in a co-öperative investigation of tuberculosis, for this purpose calling themselves the Research Committee of the National Tuberculosis Association. These men, under the leadership of Dr. William Charles White of Washington, D. C., as chairman, have received no compensation for their work, but actual laboratory expenses have been met from money raised each year in the Christmas Seal Sale. The object of this research, of course, is to find some method to extirpate the disease. While this has not yet been achieved, two discoveries in the last year have made valuable contributions to the war on tuberculosis.

Tuberculin, the substance used in the test for detecting tuberculosis in human beings as well as cattle, has been reduced to absolute purity, something never before achieved, so that it can now be

supplied wholly free from other substances which affected the accuracy of these tests in the past. The details of this process were worked out by Dr. Esmond R. Long and Dr. Florence B. Seibert, of the University of Chicago. The second research achievement consisted of the production of a wholly new mechanism for testing the individual for the presence of tuberculosis, which renders the detection of the disease possible within three or four days of infection instead of an average of two months afterward, as is at present the case. This work was achieved by Drs. Florence R. Sabin, C. A. Doan and C. E. Forkner of the Rockefeller Institute for Medical Research.

Diagnosis of tuberculosis will become much more exact by reason of the perfection of tuberculin to crystalline purity. Particularly in the examination of children suspected of infection will the new tuberculin be of great value, for heretofore it has not been certain, in the individual case, that a positive reaction was not caused by one of the various impurities which were known to exist in the tuberculin used. The skin test has always probably been complicated by elements in the test fluid other than those which indicate the disease. This development will also affect directly the testing of cattle and reduce the number of animals which are slaughtered because they react positively to tuberculin and yet show no signs of tuberculosis.

The new test devised for the earlier diagnosis of tuberculosis by members of the Rockefeller Institute utilizes a small quantity of the blood of the patient. The red corpuscles are removed and the remaining serum diluted and placed in a test tube containing one of the fatty fractions of the tuberculosis germ, known as phosphatide. If the patient has tuberculosis there will be a precipitate but if the disease is not present, nothing at all will occur. This new test will also be of use in distinguishing between cases of meningitis which are tuberculous and those which are not, something which science has heretofore been unable to do early in the disease and accurately.

The "Chemical Jury" of the Research Committee which established the base line for these studies includes: Dr. Allen K. Krause, Johns Hopkins Hospital; Dr. Esmond R. Long, University of Chicago; Drs. Eugene L. Opie, H. R. M. Landis and Charles J. Hatfield, Henry Phipps Institute; Prof. Treat B. Johnson, Yale University; Prof. Hans Zinsser, Harvard Medical School; Prof. John J. Abel, Johns Hopkins Medical School; Prof. A. N. Richards, University of Pennsylvania; Dr. Linsly R. Williams, National Tuberculosis Association; Dr. William Charles White, Washington, D. C.

THE CAMBRIDGE HOSPITAL EXONERATED

Criticism of the Cambridge Hospital to the effect that exits in case of fire are inadequate led to an investigation by a committee of the City Council with the result that the following report was rendered as published in the daily papers:

"That it is the unanimous opinion of the committee that the city of Cambridge may well be proud of its Municipal Hospital and that the people of Cambridge may well have the greatest confidence and security in the safety facilities of the hospital, based on public records of approval from the State Department of Public Safety."

A STUDY OF MASSACHUSETTS INSTITUTIONS

A committee representing the Arkansas Construction Commission has been in Massachusetts studying the construction of the Metropolitan State Hospital in Waltham in order to acquire information of value with respect to the erection and equipment of a state hospital for nervous diseases in Arkansas. A committee from Michigan has been studying the methods of the Wrentham State School and other institutions in Massachusetts.

Massachusetts is looked to for advanced ideas in construction and management of State Institutions.

ANOTHER HONOR TO MME. CURIE

The *Excelsior* of Paris reports that Mme. Curie will have the title of Commander of the Legion of Honor conferred on her in the immediate future.

She will be the first woman to receive this honor.

GRADUATION EXERCISES OF THE PETER BENT BRIGHAM SCHOOL OF NURSES

On December 6, 1929, the graduation exercises of the school of nurses of the Peter Bent Brigham Hospital were conducted in the Assembly Hall of Simmons College, Charles P. Curtis presiding.

The principal address was delivered by Elizabeth C. Burgess, R.N., A.M., Associate Professor of Nursing Education, Teachers College of Columbia University and President of the National League of Nursing Education.

The John P. Reynolds Gold Medal was awarded to Francis Margaret Daggett and the John P. Reynolds Scholarship to Dorothy Corbett.

Thirty-four nurses were given diplomas.

THE COMMONWEALTH FUND PROPOSES TO CO-OPERATE WITH STATES AND MEDICAL COLLEGES IN PUBLIC HEALTH WORK

A notice has been received by Dr. Walter L. Burrage, Secretary of the Massachusetts Medical Society, from Dr. William J. French, Director of the Division of Public Health of the Commonwealth Fund, setting forth plans for co-öperation with Health agencies and Medical Schools designed especially to meet the needs of rural health and medical service.

The text of the announcement is as follows:

THE COMMONWEALTH FUND

Announcement

The Commonwealth Fund announces a new plan of co-öperation with state health departments to promote rural health. To administer this plan, it will establish, on January 1, 1930, a Division of Public Health, under the direction of William J. French, M.D.

The program is based on three principles which the Fund believes to be fundamental:

1. *That the state health department should directly foster and guide rural public health activities.*
2. *That the progressive practice of medicine is the foundation of sound health work.*
3. *That to secure maximum results physicians, nurses, teachers, and the official health personnel must join forces.*

Two related lines of service are therefore planned: *first*, assistance to state health departments in setting up field supervision for rural health work and in developing adequate local service in selected areas; and *second*, assistance to schools of medicine, normal schools, individual physicians, nurses, and teachers to promote special training for rural health service.

This program will be put in effect in two or possibly three states in which the state health department desires and requests it, and is prepared to assume definite administrative responsibility for the proposed public health activities. The detailed plan of work in each state, subject to such modifications as may be agreed upon between the state health department and the Fund, is as follows:

I. PUBLIC HEALTH ACTIVITIES

A. The establishment, under direction of the state health department, of a field unit for the purpose of organizing and improving county or district health service in rural areas.

If there is reasonable assurance of permanence for such a unit, the Fund will share equally with the state health department the cost of initiating it, with the expectation of gradually decreasing its subsidy over a term of years.

B. Assistance, through the state health department, to two rural counties or districts in the state for the purpose of establishing complete health units to render public health service according to the best current standards. The minimum unit which will be considered for such assistance will include a full-time health officer, a sanitary officer, two public health nurses, and one clerk. Larger units are to be preferred.

If there is reasonable assurance of permanence for such units, the Fund will pay half their cost (the balance to be provided by the local community with or without state assistance), with the expectation of gradually decreasing its subsidy over a term of years.

II. MEDICAL EDUCATION

A. Assistance to a Grade A medical school which sends a reasonable percentage of its graduates into the state in question: to develop courses in preventive medicine, and to provide special facilities and opportunities for postgraduate work by rural physicians. While this school will presumably be located in the state selected, a school elsewhere may be designated if it customarily draws students from the state in large numbers.

The appropriation for the teaching of preventive medicine is planned not to exceed $10,000 per year, and that for postgraduate facilities not to exceed $15,000 per year. Both will depend upon reasonable assurance of permanence for the work established, and will be made preferably on a decreasing scale.

B. The establishment at the same medical school of a scholarship or loan fund for the use of not less than five students from the state in question who agree to go into rural practice in that state for a stipulated period after graduation.

C. The establishment of fifteen postgraduate fellowships each year for physicians in each state selected for the public health activities mentioned above, as a contribution toward raising the standards of rural medical practice. Five fellowships will be awarded in each of the counties or districts where health units are established, and five in the state at large. Appointments will be made by the Commonwealth Fund.

Each fellowship will provide not more than $250 per month (plus tuition and railroad fares) for a period of study not to exceed four months. Subjects of study will be those useful in general practice; no grant will be made to finance the study of specialties (except "brush up" courses for men already engaged in specialized practice).

III. PUBLIC HEALTH NURSING

A. The establishment of one or more postgraduate fellowships for public health nurses actually employed in the state selected.

Each fellowship will provide not more than $800 for a period of study not to exceed four months. Nurses working in the districts where health units are established under this plan will have preference.

IV. HEALTH EDUCATION

A. Assistance to the state normal school, or other teacher-training institution, in providing facilities for the training of teachers in the purposes and methods of health education.

B. The establishment of one or more fellowships in health education to be awarded each year to teachers employed in the schools of the districts where health units are established under this plan.

Each fellowship will provide not more than $1200 for a period of study not to exceed one school year.

This plan in its entirety is intended to be flexible and experimental. No fixed time-limit has been set for its operation. The staff of the Division of Public Health will endeavor to assist in correlating the educational projects in each state with the public health activities to the end that progress may be consistent and concrete.

Proposals for co-öperative activities under this plan, and requests for further information, should be addressed to William J. French, M.D., Director Division of Public Health, The Commonwealth Fund,

Fuller Building, Madison Avenue and Fifty-seventh Street, New York.

EDITORIAL COMMENT:—This scheme seems to indicate a broad and commendable effort to provide rural communities with preventive and therapeutic medicine. It will be studied by physicians, sociologists and economists with interest.

It may be regarded with suspicion by those who fear lay influence in the development of medical service in association with organized health agencies. That part of the plan which will include the co-öperation of a Class A Medical School in sending a "reasonable percentage" of its graduates into rural sections, may prove to be the most difficult part of the program. Similar suggestions have been made before, but medical schools have not generally shown interest in this plan because it has been found impractical to assign graduates to localities which do not offer such attractions as may fit in with a young doctor's plans and ambitions.

No plan of this sort will work unless doctors can be found who will take on the work.

Several plans have been proposed from time to time by individuals and organizations designed to make rural practice attractive, such as county hospitals and laboratories, formation of groups of doctors for the purpose of co-öperative service in a given area and subsidies to be granted as special inducements to augment the doctor's income.

This Commonwealth Fund plan will, if accepted by states or smaller units, be a series of demonstrations supported by adequate funds to insure immediate success. If the result is sufficiently impressive, these plans can be made suitable wherever the need exists.

If the medical profession is ready to endorse these programs, the way seems to be clear.

A REMARKABLE RESULT

The Beverly Hospital Fund Campaign Committee has been engaged in a drive to raise $500,000 for an endowment fund. Less than $50,000 is needed to reach the objective. This result is a remarkable tribute to the Committee and also to the people of the North Shore and is another demonstration of the appeal which a hospital has in an effort to raise money.

DR. FALK'S ALLEGED DISCOVERY OF THE INFLUENZA GERM

Reports in the daily papers set forth doubts with respect to the claims of I. S. Falk that he and his associates have isolated the germ of influenza.

These criticisms will appear in the *Journal of the American Medical Association* of this week. If the claims are premature, as believed by some authorities, the effect will be to discredit the standing of the claimants in the scientific world. With the history of so many unsound theories and alleged discoveries one wonders why an educated laboratory worker would risk his reputation in such important matters—when a little patience and submission of his findings to those qualified to pass upon them would demonstrate the truth.

CORRECTION

Case 11512 of the Cabot Case Records which appears on Page 1259 of this issue should be numbered 15512.

CORRESPONDENCE

USES FOR A FEW ORDINARILY USELESS OBJECTS

The NEW ENGLAND JOURNAL OF MEDICINE,

We are enclosing a short paper, "Uses for a few Ordinarily Useless Objects," which we hope you may find a small corner for in your JOURNAL.

Respectfully,

W. G. NELSON,
A. A. Surgeon, U.S.P.H.S.

1. Empty ethyl chloride containers (the metal variety) make excellent exercisers for improving the grip of stiff or weakened hands and fingers. These tubes are light in weight, yet strong, and are just about the right size for gripping. The nozzle and stop-cock are first removed by unscrewing. If the nozzle happens to be a good one it is well to save it, as often tubes are received with an imperfect nozzle, through which one cannot secure an adequate spray which is most necessary in securing proper results from ethyl chloride.

2. Adhesive tape spools have a central opening just about large enough for a Wassermann size test tube, and make excellent individual test tube holders when taking Wassermann tests. A coat or two of lacquer, of whatever color one wishes, helps to make them harmonize with the surroundings of office or laboratory.

3. The small ends of larger gauze bandages need not be thrown away, as they can be cut through with a sharp knife to a proper size, and utilized for penis and finger bandaging which often does not require more than a few turns to secure a small dressing in place.

4. Certain cylindrical mailing containers for large bottles (eight or ten ounce), which are occasionally received by most physicians, separate into two unequal parts. When covered with a coat of lacquer the taller section makes an excellent container for applicators, and the shorter section is very useful for holding tongue depressors.

OBITUARIES

TRIBUTE TO REBECCA M. SULLIVAN

(*Transcript*, November 29, 1929)

Miss Rebecca M. Sullivan, born fifty-eight years ago in Norwich, Connecticut, who for many years had made her home in Massachusetts, was a woman of such remarkable personality, achievement and devotion to public ends, as to make her a memorable figure in the community life in Boston. Early in

life she had taken up nursing, graduating with honors from the Long Island Hospital Training School. Following a brief period of post-graduate work in New York City, she returned to the Long Island Hospital as head nurse, and later, as nurse-in-charge of the surgical operating room. Still later she was made curator of the hospital records. In 1898, the visiting pathologic service having been established at the hospital, with Dr. Magrath in charge, Miss Sullivan was appointed custodian of the records of this service and instituted the then new practice of reporting concurrently with the post mortem examination the result of its findings. This work she continued with ever-increasing skill and accomplishment until January, 1907, when Dr. Magrath was appointed medical examiner for Suffolk County, from which time until the present, Miss Sullivan has almost invariably sat at the table opposite him, and whatever the nature of the examination, official or in consultation, whatever the condition under examination, this fastidious woman has faced the situation with scientific detachment equalled only by her delicacy, reverence, and pity.

It was this unusual combination of skill, a rare order of intelligence, forgetfulness of self, and consecration to duty, coupled with an absolute loyalty alike to the service of which she was an integral part and to her immediate superior—better termed colleague—which made of her a public servant whose worth can best be attested by these words spoken repeatedly by the medical examiner concerning Miss Sullivan's significance: "Whatever I have been able to achieve in nearly a quarter of a century of official and professional life has been due very largely to my having had always at hand the talents, the endurance, and the unfailing devotion of my indomitable first officer."

But to conclude without a word in reference to Miss Sullivan's gayety of spirit, lightning-like wit, amazing candor, courage, and prodigal generosity would be to wrong those who loved her most for these interesting qualities.

"She has fought the good fight, kept the faith, and run the race."

M.

MORTON PRINCE, M.D.

In the death of Morton Prince which occurred August 31, 1929, this Society has lost one of its most distinguished members. His life was devoted to the study of the nervous system and for nearly fifty years contributions came unceasingly from his ready pen. Diversified as his medical interests were, he will be known primarily in the future for his work in the field of psychopathology in which he was a pioneer. His studies in multiple personality and in the complex subject of personality in general brought him wide recognition, both in this country and abroad, and did much toward paving the way toward a clearer recognition of their importance in a properly rounded medical training. He had the courage of his convictions and expressed them with unfailing vigor. In spite of his voluminous output of books and medical papers, he found time and opportunity to enter into civic affairs with equal enthusiasm. His varied services to Boston and Massachusetts and to the cause of the Allies in the Great War are evidence of the catholicity of his mind and his extraordinary versatility. He was recognized not only as a physician and scientist of first rank, but also as a citizen in the best sense of that term. With these outstanding attributes was combined an exceptional capacity for the enjoyment of life in its less serious aspects. He took keen pleasure in riding, yachting, and in his social clubs. He played as well as he worked. His personality is known to us all. He was kindly, courteous, and considerate in all his relations, a fair controversialist and generous in his treatment of those with whom he disagreed. He will be missed in this Society which he served loyally to the end regardless of his advancing years, and in the larger circle of his scientific and social interests. He died in his seventy-fifth year with mind unimpaired. It is fitting that the Boston Society of Psychiatry and Neurology should place on record its deep appreciation of the man and his attainments and cause this notice to be published in the NEW ENGLAND JOURNAL OF MEDICINE and to be sent to his bereaved family.

E. W. TAYLOR.

Read at a meeting of the
Boston Society of Psychiatry and Neurology
November 21, 1929.

NEWS ITEMS

DR. MALCOLM MACKEITH HAS BEEN VISITING IN BOSTON—Dr. Malcolm MacKeith, Fellow of Magdalen College, Oxford, England, a pharmacologist and Dean of the Oxford Medical School and a Rhodes Trust delegate, has been studying the theoretical and practical methods of medical education in Boston and other medical centers.

While in Boston he has been the guest of Dr. A. Warren Stearns, Dean of Tufts College Medical School.

From here, Dr. MacKeith will go to Montreal and Toronto and after that will visit other medical centers in the United States.

THE TUFTS COLLEGE MEDICAL SCHOOL—Phi Chi Fraternity of Tufts Medical School gave an informal dance Monday evening, December 16, at 9 o'clock in the Empire Room of Hotel Kenmore. Music was furnished by Glennon's Orchestra. The members of the dance committee were:

Frank H. McCarthy, 1931, of Lawrence, Mass.
Arthur A. Thibodeau, 1932, of Newport, N. H.
George O. Tapley, 1933, of Brookline, Mass.

Officers of the fraternity are:

Presiding Senior: Justin L. Anderson, 1930, of Alfred, Me.

Vice-Officer: Casimir F. Wozmak, 1931, of Haverhill, Mass.

Secretary: William J. Cosgriff, 1931, of Springfield, Mass.

Treasurer: John B. Nicholson, 1931, of Haverhill, Mass.

Faculty members of the fraternity were the guests of the chapter at the dance.

A meeting of the Senior Medical Class has been arranged for Thursday evening, December 19, in the library of Tufts Medical School. Dr. Timothy Leary, former professor of Pathology, Bacteriology and Jurisprudence, at the School, is scheduled to speak on Medical Jurisprudence from the Medical Examiner's Standpoint.

OFFICERS OF THE INTERSTATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA—At the annual meeting of this organization at Detroit the officers elected for the ensuing year are: Dr. William D. Haggard, Nashville, Tennessee, president; Dr. Henry A. Christian, Boston, president-elect, and Dr. Edwin Henes, Jr., Milwaukee, executive secretary and director of exhibits. The next annual meeting will be in Minneapolis.

DR. ARTHUR D. HOLMES ELECTED SECRETARY—At the September meeting of the American Chemical Society in Minneapolis, Dr. Holmes was elected Secretary of the Medicinal Chemistry Division. The next meeting of the Society is in Atlanta, Georgia, during the week of April 7, 1930. If one can judge by Dr. Holmes' present enthusiasm concerning the program, the Medicinal Chemistry Section is due to have a very interesting session.

A PROPOSED DIAGNOSTIC HOSPITAL—Mrs. Edith Nourse Rogers, Representative in Congress from Massachusetts, introduced a bill providing for the establishment of a Diagnostic Hospital Center for World War Veterans to be built and equipped in Boston or vicinity.

The bill if passed will carry an appropriation of $1,400,000.

METRIC MEASURES BEFORE CONGRESS—Declaring that adoption of the metric weights and measures by the United States will be urged energetically during the new session of Congress, Hon. Fred A. Britten of Illinois has introduced metric legislation in the House of Representatives with some alternative resolutions. One resolution provides for a survey and report by the United States Secretary of Commerce on world standardization, with a view to general use of metric weights and measures by this country. The other resolution calls for adoption of the metric units in merchandising throughout the United States after a transition period of five years.

A nationwide campaign for metric legislation has been launched. The Metric Association holds its annual convention in Des Moines, Iowa, on December 30. Interested persons will gather to perfect plans to bring the United States onto the metric basis in 1930.

Metric advocates throughout the United States are petitioning the Secretary of Commerce, urging that he accord favorable consideration to the world metric standards. More than 300 chambers of commerce are endorsing the advance, besides scores of influential national organizations.

The States of Illinois, California, Tennessee, North Dakota and Utah are among those which through their legislatures have petitioned Congress to adopt the metric standards for general use in the United States.

WILLIAM T. KNOWLTON, M.D., formerly of Hubbardston, will on completion of a post-graduate course he is now taking, become associated with the physicians of Holden Clinic, Department of Internal Medicine and Obstetrics.

NOTICES

It occasionally happens that a subscriber fails to receive the JOURNAL because of error in mailing or loss or mutilation of the stencil. Subscribers are requested to notify this office promptly of any irregularity in receipt of the JOURNAL.

Dr. Simeon Elliott has opened an office at the Cambridge, 483 Beacon Street, Boston.

A SURGEON WANTED

This office has been informed that there is an opening for a well-qualified young surgeon in a community of ten thousand population in New England.

Anyone who would like to discuss this matter may confer with the Managing Editor of the JOURNAL.

LOCAL REGISTRATION OF PHYSICIANS IN MASSACHUSETTS

Statements in the daily press that there are 1146 physicians in Massachusetts who are not registered apply to failure to record the certificate of registration issued by the State Board of Registration in Medicine with Town Clerks. The word *Town* in the existing law may be confusing and may have led some to have construed the requirement as exempting physicians practising in a city.

The facts are set forth in the JOURNAL of December 12, 1929, page 1218, in a communication from Dr. Vaughan, Secretary of the Board of Registration in Medicine, in which the suggestion appears in favor of re-registration of physicians.

REPORTS AND NOTICES OF MEETINGS

REPORT OF PROFESSOR EUGEN BLEULER'S ADDRESS

Professor Eugen Bleuler, formerly Director of the Psychiatric Clinic in Zurich, Switzerland, spoke at the Boston Medical Library on Saturday evening, December 7, as the guest of the Massachusetts Psychiatric Society. His subject was "Physiologic and Psychic Symptoms in Schizophrenia". Dr. L. Vernon Briggs, President of Massachusetts Psychiatric

Society, presided at the meeting. About 300 members and guests were present.

Professor Bleuler gave an interesting discussion of the symptoms of Schizophrenia, often using cases to illustrate his points. He discussed the difference between the fundamental disease process and the superadded symptoms which are determined largely by environmental circumstances. Professor Bleuler held that Schizophrenia was largely a constitutional disorder in the sense that a certain predisposition was inherent in the individual. He emphasized, however, the rôle of environment in producing the final breakdown. He discussed in detail a number of physiological and psychological symptoms which are present in the disorder.

Professor Bleuler's paper was discussed by Drs. Campbell, May, Myerson, Solomon and Hoskins.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

The Essex South District Medical Society held its regular meeting at Salem Hospital on December 4, 1929 at 5 o'clock P. M.

The following clinical program was presented:

5.00 P. M. Moving Picture, "Surgery of the Hand." Kanavel.

5.30 P. M. Cervical Caesarean Section. Dr. M. T. Field.

5.45 P. M. Skin Graft. Dr. C. L. Curtis.

6.00 P. M. Spinal Anesthesia. Dr. E. L. Peirson, Jr.

6.15 P. M. Stone in Kidney. Dr. W. G. Phippen.

6.30 P. M. Hypertension. Dr. A. N. Sargent.

7.00 P. M. Dinner in Nurses' Dining Room.

The speaker of the evening was Dr. Howard B. Sprague of Boston, whose subject was "Recent Progress in the Diagnosis and Treatment of Heart Disease."

Attendance 76. Adjourned 9 P. M.

WM. T. HOPKINS, *Reporter.*

THE GREATER BOSTON MEDICAL SOCIETY

The Greater Boston Medical Society held a joint meeting with the staff of the Beth Israel Hospital in the amphitheatre of that hospital on December 3, 1929. The paper of the evening on "Thrombo-angiitis-Obliterans" was presented by Dr. Leo Buerger.

Before the paper Dr. Maurice Barron showed three cases illustrating different phases of the disease under discussion. The first patient was a young girl whose chief presenting sign was discoloration of the extremities due to a vasomotor spasm. The second patient showed the effects of alcohol injections of a nerve to stop the pain from an ulcerated toe; the pain was controlled, but footdrop resulted. The third case suffered from ulceration resulting from claudication. The pain had been relieved by ganglionectomy, but phlebitis developed. He then showed the signs of a hemiplegia, and of coronary disease, and later he developed polycythemia.

Dr. Solomon introduced Dr. Leo Buerger of New York. The correct approach, said Dr. Buerger, to the understanding of thrombo-angiitis obliterans requires a complete understanding of the lesions of arteries and veins. When the study of this disease was first begun, great confusion in the diagnostic approach and in the understanding of the pathology was found. Thrombo-angiitis obliterans is an affection differing from other arterial lesions, and is a specific type of inflammatory reaction very characteristic in certain phases of its course, so that it must be called an entity. The clinical signs are similar to those found in other conditions resulting from peripheral circulatory disturbances. The disease is an arteritis and a phlebitis with an acute stage involving all the vessel coats, and followed by thrombosis which leads to the clinical manifestations.

The clinical aspect of this disease may be divided into two parts. The early stage of acute inflammation in the vessel walls with vague symptoms may indicate the starting inflammatory process. Vague pains, tenderness over arteries followed by absence of pulse, together with a migrating phlebitis should make one suspect thrombo-angiitis obliterans. The second phase of this disease clinically shows the results of thrombosis. It is not due to the disease itself and any arterial blocking may produce the same signs and symptoms. A diagnosis of this disease is not justified on these grounds alone.

The pathology of the two stages varies. In the acute stage all the coats of the vessels are attacked. There is a polynuclear invasion of media and adventitia which migrate into the blood clot forming specific miliary foci which are really abscesses around the periphery of the clot. These later organize with a development of giant cells and epithelioid cell formation giving the appearance of tubercles. Since these foci later disappear to be replaced by granulation tissue, a sure diagnosis can only be made in the acute stage by biopsy. The final picture is the end result of multiple miliary abscesses. In the second stage of the disease the diffuse character without symptoms excepting intermittent claudication soon disappears and lesions appear on the toes and extensor surfaces of the extremities. All grades of activity are seen from the rare fulminating cases to the ones where the foot swells, the toes become waxy, the skin markings disappear, and necrosis slowly progresses. These occlusive processes are apt to start at the periphery, but may begin anywhere along the larger arteries. The process is not always continuous, but may skip a part of an artery. In a fair percentage of cases the femoral, iliac, or even aortic vessels may be involved. The speaker showed diagrams of vessels in amputated legs he had injected illustrating the extent of the thrombosis. In the final stages of the disease the vessels are found to be dense cords of connective tissue with the energetic vascularization in the media so characteristic of thrombo-angiitis obliterans. The vessels are useless and cannot function again. In their walls there is not so much heaping up of the elastic lamina as in arteriosclerosis and new elastic fibres are found around the lumen of the new narrowed canal. When neighboring vessels are affected, they tend to fuse.

The etiology of the disease is still uncertain. Despite the fact that no bacterium, spirillum, virus, or spirochaete has ever been found, Dr. Buerger believes we are dealing with an infection. Besides its inflammatory nature, the fact that the disease is on the increase and is no longer limited to Jewish peoples still further strengthens the infection theory. Against this theory is that experiments on monkeys have totally failed. Emuisions of acute vein lesions injected into monkeys have brought no results. These experiments repeated on patients suffering from the disease, the material being placed outside of ligated veins, produced three successful cases. This, Dr. Buerger said, may be the first step towards therapeutic methods of curative value.

In discussing the cases, Dr. Buerger pointed out that while there was no thrombosis yet in the first case and it was still a functional disorder with chronic vessel spasm, thrombosis might perhaps be expected. In the second case, Dr. Buerger recommended amputation. While alcohol injections and sympathectomy give temporary relief, one must look ahead years and see the end result. In discussing the third case, Dr. Buerger said that while thrombo-angiitis obliterans of the coronary arteries may be considered, it should not be diagnosed. Polycythemia may be associated with this disease, but not in a causative sense.

The animated discussion which followed the paper brought out the following points. The best surgical treatment is the injection of the sensory fibres and then dressing the lesion as any other similar one. If the pain can be relieved, some arrest of the course of the disease can be hoped for. The injection of foreign protein helped some cases though the mode of its action is not understood. The relationship of tobacco smoking to the disease may be one of predisposition, but one cannot say definitely because individuals who never smoked have had the disease.

The meeting was very well attended and extremely interesting.

WACHUSETT MEDICAL IMPROVEMENT SOCIETY

The meeting of the Wachusett Medical Improvement Society was held December 4, 1929.

Hospitality as practised by the Staff of the Veterans' Hospital made this meeting a very colorful social event and an unusually successful scientific gathering. Some sixty guests shared the excellent supper at which most of the physicians' wives were present.

While the ladies were entertained by the wives of the Staff Physicians, the members of the Society held their meeting in the Medical Library.

Dr. Winfred Overholser, Director of the Division for Examination of Prisoners, Department of Mental Diseases, Commonwealth of Massachusetts, spoke on "Criminal Insanity." A few outstanding remarks from his extremely interesting talk follow. In spite of what the newspapers say, we are not in the midst of a fearful crime wave. There is only an increase in the number of *arrests* for violation of automobile and liquor laws.

The criminal insane person is not punished, he is only committed. The law does not aim to avenge the community but only to protect it, when dealing with the criminal insane.

Mental deficiency is not an important factor in crime. Some even pretend that criminals are brighter than the average. Our percentages of mentally deficient criminals are based on those that are in jail. The great majority of them and very likely the brightest are at large.

The speaker sees more co-öperation now than ever before between the courts and the psychiatrists. Some law schools have inaugurated courses in psychiatry. In conclusion, Dr. Overholser recommended that each criminal be tried individually without being submitted to any standardized rules.

Discussion was conducted by Drs. Burley, Goldwyn, Trowbridge and Emerson.

The meeting adjourned at 10:15 P. M.

PAUL DUFAULT, M.D., *Sec. and Treas.*

THE AMERICAN PUBLIC HEALTH ASSOCIATION

The 59th Annual Meeting of the American Public Health Association will be held in Fort Worth, Texas, during the week of October 27, 1930, with the Hotel Texas as headquarters.

The Annual Meeting of this oldest and strongest of public health organizations brings together for a week of scientific discussion, all of the public health leaders of the continent. It is always the most important health convention of the year. Health officers, nurses, dietitians, sanitary engineers, child and industrial hygienists—all of the specialists that make up the public health profession—meet to consider their common problems. Each of the ten Sections of the Association—Health Officers, Laboratory, Vital Statistics, Public Health Engineering, Public Health Nursing, Public Health Education, Food, Drugs and Nutrition, Industrial Hygiene, Child Hygiene and Epidemiology—arrange an individual program and there are a number of General Sessions to which the public is invited.

Detailed programs of the Fort Worth meetings will be announced in the official publication of the Association—*The American Journal of Public Health and the Nation's Health.* Further information may be obtained from the Executive Secretary, Mr. Homer N. Calver, 370 Seventh Avenue, New York, N. Y.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

1929-1930—Massachusetts Dietetic Association. Complete schedule appears on page 852, issue of October 24.

December 19—The Clinical Conference of the New England Hospital for Women and Children. Complete notice appears on page 1225, issue of December 12.

December 20—New England Roentgen Ray Society. Complete notice appears on page 1224, issue of December 12.

December 21—Clinic at the Boston City Hospital. Complete notice appears on page 1225, issue of December 12.

January 6-7—The Sectional Meeting of the American College of Surgeons. Detailed notice appears on page 1181, issue of December 5.

January 7—The next meeting of the Greater Boston Medical Society will take place on this date.

February 3—American Heart Association. Complete notice appears on page 1181, issue of December 5.

February 10-14, 1930—American College of Physicians. Complete notice appears on page 853, issue of October 24.

March-October, 1930—International Medical Postgraduate Courses in Berlin. Complete notice appears on page 853, issue of October 24.

September 4-8, 1930—Fifth International Congress on Physiotherapy. Complete notice appears on page 906, issue of October 31.

October 27, 1930—The American Public Health Association. Detailed notice appears on page 1271.

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

January 8, 1930—Wednesday—Semi-annual meeting at Centre Church Vestries, Main Street, corner of Vestry Street, opposite City Hall, Haverhill, (Telephone 548) at 12:30 sharp.

May 1—Thursday—Censors' meeting at Hotel Bartlett, 95 Main Street, Haverhill, (Telephone 3430) at 2 P. M. sharp. Candidates should present their diplomas to the Secretary one week in advance.

May 7—Wednesday—Annual Meeting.

J. FORREST BURNHAM, Secretary.

Essex South District Medical Society

Wednesday, January 8, 1930—At the Beverly Hospital Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Harry H. Germain, Boston. Subject: "Some Aspects of Cancer of the Colon." General Discussion from the floor.

Wednesday, February 5, 1930—Council Meeting, Boston.

Wednesday, February 12, 1930—Danvers State Hospital, Hathorne. Clinic 5 P. M. Dinner 7 P. M. Speakers: Dr. Winfred Overholser. Subject: "Criminology and Psychiatry." Mr. Clark, District Attorney for Essex County, who will speak on the legal aspect.

Wednesday, March 5, 1930—Lynn Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. R. S. Titus, Boston. Subject: "Some Aspects of Caesarean Section," illustrated with Moving Pictures. General Discussion from the floor.

Wednesday, April 2, 1930—Hotel Hawthorne, Salem. Dinner at 7 P. M. Speaker: Dr. Timothy Leary, Boston. Subject: "Diagnostic and Therapeutic Pitfalls in Intracranial Pyogenic Infections."

Thursday, May 1, 1930—Censors meet for Examination of Candidates at Salem Hospital at 3:30 P. M.

Tuesday, May 13, 1930—Annual Meeting. The Tavern, Gloucester. Speaker: Dr. C. Macfie Campbell, Director of Boston Psychopathic Hospital. Subject to be announced later. Ladies invited. Dancing.

R. E. STONE, M.D., Secretary.

Franklin District Medical Society

The meetings of the Franklin District Medical Society will be held at the Weldon Hotel, Greenfield, Mass., on the second Tuesdays of January, March and May, at 11 A. M.

CHARLES MOLINE, Secretary.

Hampshire District Medical Society

Meetings of Hampshire District will occur at 11 A. M. the second Wednesdays of February and April and will be held at the Dickinson Hospital, Northampton. The annual meeting will be held in May.

LUTHER O. WHITMAN, M.D., Secretary.

Middlesex East District Medical Society

January 15—At Boston, Harvard Club.

March 12—At Melrose.

May 13—At Unicorn Country Club, Stoneham.

ALLAN R. CUNNINGHAM, Secretary.

Middlesex South District Medical Society

Winter meetings—jointly with Suffolk District.

April 16, 1930—Annual meeting. Commander Hotel, Cambridge. Program to be announced.

May, 1930—Censors' meeting.

ALEXANDER A. LEVI, Secretary.

Norfolk District Medical Society

January 27, 1930—Roxbury Masonic Temple. "Recent Advances in Diagnosis and Treatment of Syphilis." The speakers will be Drs. C. Morton Smith and Austin W. Cheever.

February 24, 1930—Roxbury Masonic Temple, 8:00. Dr. Edwin H. Place has been invited to read a paper and has been given carte blanche in the selection of his subject.

March 24, 1930—Roxbury Masonic Temple. Dr. Burton E. Hamilton. Subject to be announced.

May 6, 1930—Annual Meeting. Program to be announced.

The Censors meet for the examination of candidates, May 1, 1930, in the Roxbury Masonic Temple, 171 Warren Street, Roxbury, at 4:00 P. M.

Applications must be in the hands of the Secretary at least one week previous to date of examination.

Owing to inability to engage the Roxbury Masonic Apartments on the last Tuesday of the month, such meetings as will be held in the Roxbury Temple will be held Monday evenings as per the dates above.

FRANK S. CRUICKSHANK,
Secretary, Norfolk District Medical Society.

BOOK REVIEW

The Surgical Clinics of North America. Vol. 9, number 5. Philadelphia Number. October, 1929. W. B. Saunders Company.

This issue of the Clinics contains contributions from most of the leading surgeons of Philadelphia. It opens with the clinic of Deaver and Surden. In discussing *the relationship of the pyloric sphincter to peptic ulcer* they suggest treatment by excision of a portion of the pyloric muscle. Satisfactory results have been obtained using this method not only in acute and chronic peptic ulcer and perforated ulcer but also in cases of reflex pylorospasm. The customary disparagement of medical treatment is reiterated. The other conditions which they illustrate with cases are hernia, hematoma of the rectus muscle, suppurative thyroiditis and cholangitis.

A most interesting clinic is presented by Babcock. The most spectacular cases are two of *anastomosis between the common carotid artery and the jugular vein.* In the first case this procedure successfully decompressed an *aortic aneurysm* while in the second, it gave relief to a case of hopelessly advanced *pulmonary tuberculosis* by returning oxygenated blood to the lung. In the consideration of *phrenicotomy for pulmonary tuberculosis* he emphasizes the importance of including the accessory phrenic nerve in the avulsion. The technic is carefully described.

The *surgical treatment of gastric and duodenal ulcer* is reviewed by Nassau and is also ably presented by Eliason and Hinton.

Carnett and Case give a very interesting *clinical and pathological discussion of so-called subacromial bursitis.* In 50 cases of calcareous deposits in which the bursa was exposed, the bursa itself was normal, the deposit being on, in or under the supraspinatus tendon. He advises operation for removal of this deposit.

A very able *clinical study of midline cerebellar tumors in children* is presented by Francis Grant. The symptomatology and findings are frequently vague yet early operation is very important especially because delay may destroy vision.

From the clinic of A. P. C. Ashurst, Crossan reports several *unusual tumors of the soft parts.* These are a huge desmoid of the abdominal wall, a case of fat necrosis of the breast following saline hypodermochysis, sarcoma of the muscles of the thigh, rhabdomyoma of the leg, sarcomatosis (neurocytonia) of the skin, and a parotid tumor.

Several other nearly equally valuable clinics round out this interesting volume.